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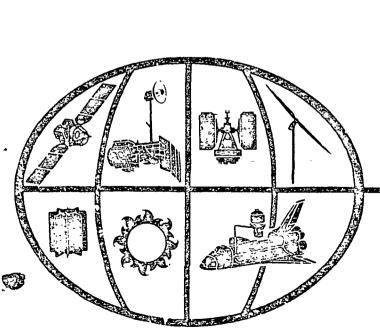
LANDSAT D

DATA FORMAT CONTROL BOOK

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VOLUME II (TELEMETRY)





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LANDSAT-D DATA FORMAT CONTROL BOOK VOLUME II (TELEMETRY)

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REVISION LOG

This log identifies those portions of this specification which have been revised since original issue. Revised portions of each page, for the current revision only, are identified by marginal striping.

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NOTE

Data from portions of the Landsat-P Ground Segment Data Base, Version 113, are contained in this volume. In the event of conflict between that data and the latest revision of the Landsat-D Ground Segment Data Base, the Landsat-D Ground Segment Data Base takes precedence.

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SECTION 1

INTRODUCTION

1.0 INTRODUCTION

This volume defines the formats used for the transmission of Landsat-D and Landsat-D Prime spacecraft telemetry data through either the TDRS/GSTDN via the NASCOM Network to the CSF.

The volume contains a description of the Landsat-D and Landsat-D Prime spacecraft's telemetry flow from the Command and Data Handling Subsystem, a telemetry list and telemetry matrix assignment for the mission and engineering formats. The OBC controlled format and the dwell format are also discussed. The OBCs contribution to telemetry, and the format of the reports, are covered. The high rate data channel includes the payload correction data format, the narrowband Tape Recorder and the OBC dump formats.

1.1 TELEMETRY OVERVIEW

The Landsat-D spacecraft downlink consists of an S-Band frequency capable of being received at various Ground Spaceflight Tracking Data Network (GSTDN) stations and through the Tracking and Data Relay Satellite (TDRS) to the TDRS Ground Station at White Sands, New Mexico as shown on Figure 1-1. The S-Band downlink telemetry data is transmitted on 2287.5 MHz via the Landsat-D omni antenna or high gain antenna. The omni antenna S-Band telemetry is received by the GSTDN, foreign ground stations, the TDRS, and the transportable ground

station. There are two data bit streams: the S-Band Realtime spacecraft telemetry which contains spacecraft subsystem health and status (housekeeping) data, Global Positioning System (Receiver/Processor Assembly) data; the High Rate Channel telemetry which contains OBC dump or Payload Correction Data (PCD) or Narrowband Tape Recorder (NBTR) Playback (Reproducer) data.

Also, a ranging code is transmitted to the Landsat-D spacecraft either via the TDRS or from a GSTDN ground station and returned coherently with the forward link via a PN range code or ranging tone respectively. Tracking data is relayed over NASCOM lines to the Orbital Computations Group (OCG). Tracking by the TDRS requires establishment of a forward and return link with the Landsat-D spacecraft via TDRS S-Band Multiaccess (MA) or single access (SSA) channel. Ranging is accomplished by the Landsat-D high gain antenna initially program tracking the TDRS. The Landsat-D spacecraft then switches to Ku-band autotracking once the Ku-band received signal level indicates lock. The OBC controls the Ku/S-band high gain antenna during program tracking of the TDRS.

1.2 REALTIME SPACECRAFT TELEMETRY

The realtime telemetry data flow is from the Landsat-D spacecraft via the TDRS to the White Sands Ground Station, hence via NASCOM to the GSFC Landsat-D OCC. Additional support is provided by the GSTDN sites and hence via NASCOM to GSFC Landsat-D OCC. There is a Landsat-D Spacecraft onboard recording capability of the realtime spacecraft narrow band telemetry data. A housekeeping telemetry rate of 8 Kbps is used for normal operations via the TDRS high gain antenna to

the TDRS satellite operating in the MA or SSA mode and to the GSTDN/Foreign Ground Stations via the omni antenna. Housekeeping telemetry rate of 1 Kbps is available for use when transmitting via the omni to the TDRS while is operating in the SSA mode for Landsat-D orbit adjusts.

There are two telemetry formats controlled by ROM's: Format I (Engineering Format) is for Landsat-D subsystem data with emphasis on attitude control data during transmission supporting launch operational, orbit adjust maneuvers, or for safehold) at 8 Kbps rate. Format II (Mission Format) is for Landsat-D subsystem and sensor housekeeping at 8 Kbps (normal mode). A third format is possible but not planned for usage and is controlled by the On-Board Computer. Telemetry rates are independent of the formats.

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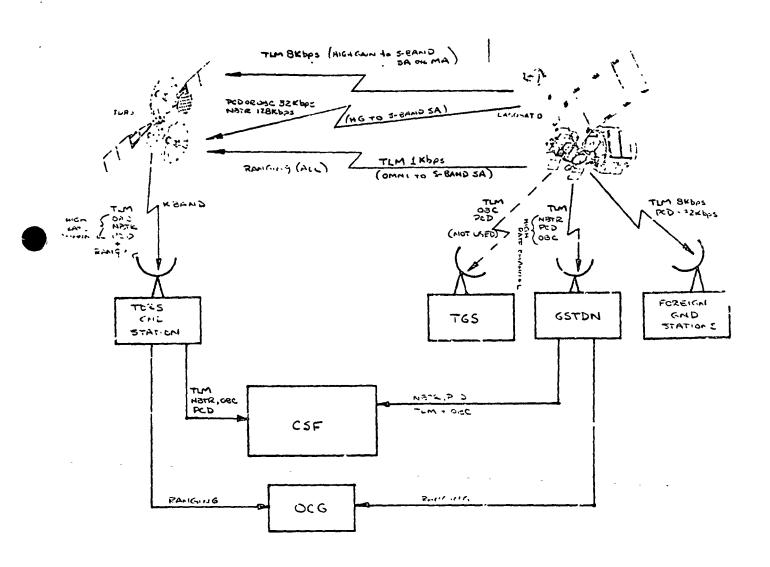


Figure 1-1. Landsar-D Telemetry Flow

1.3 HIGH PATE TELEMETRY CHANNEL

The high rate telemetry channel is transmitted simultaneously with the realtime spacecraft telemetry and received and relayed by the TDRSS and/or the GSTDN to the Landsut-D UCC in a similiar fashion as described above. The high rate telemetry channel contains several different kinds of data with different formats and data rates as a function of the data routing. Only one type of data whether Payload Correction Data (PCD), OBC Dump, or Narrowband Tape Recorder (NBTR) Playback data can be transmitted at a time via the high rate channel telemetry stream. PCD is also contained in the TM Telemetry stream. The PCD is transmitted on the high rate channel at 32 Kbps with a unique format. The OBC Dump is transmitted at 32 Kbps (1 Kbps is available if needed). The NBTR playback is transmitted at 128 Kbps via TDRS or 256 Kbps to the GSTDN and normally replayed at 128 Kbps to the CSF. The playback telemetry format is the reverse of the realtime spacecraft telemetry. Playback of a full Tape at 128 Kbps takes ar operating cime of 14.9 minutes and 256 Kbps takes 7.45 minutes. The formats are described later.

In addition to the GRTDN's, a Transportable Ground Station (TGS) located at GSFC can receive S-band Cownlink telemetry although the TGS is not planned to be used in this manner. Also, TGS receives TM & MSS wideband data and forwards them to the Data Receive Record and Transmit System (DRRTS). The TM and MSS data description formats are not part of this DFCB volume. They are included in SVS-10125, Data Format Control Book, Volume V, (Payload).

SECTION 2

TELEMETRY DOWNLINK DESCRIPTION

2.1 GENERAL DESCRIPTION

The realtime spacecraft telemetry (housekeeping and GPS data) and the high rate channel (PCD, NBTR or OBC) data are downlinked via the S-Band Transponder, Figure 2-1. The TDRS System, the GSTDN, foreign ground stations and the Transportable Ground Station (TGS) are capable of receiving this downlinked data/dump. The telemetry rate and format are changeable based upon the spacecraft commanded mode of operation.

The configuration of the S-band downlink provides the capability for both realtime spacecraft telemetry and the high rate channel telemetry through the TDRS and the GSTDN simultaneously, if-required. Telemetry data to the GSTDN is via two bit streams, biphase modulated and summed in a linear network and transmitted as residual-carrier phase modulation on S-Band. The two TDRS data bit streams are modulo-2 added to internally-generated PN codes and transmitted independently on the ln-phase (I) channel and the Quadrature (Q) channel as staggered-Quadrature-Phase-Shift-Keyed (SQFSK) modulation of the S-band return link.

The use of transmitter A or B is commandable as is the use of either the OMNI or high gain antenna's via settings of RF Switches 1 and 2 for TDRS and/or GSTDN operations.

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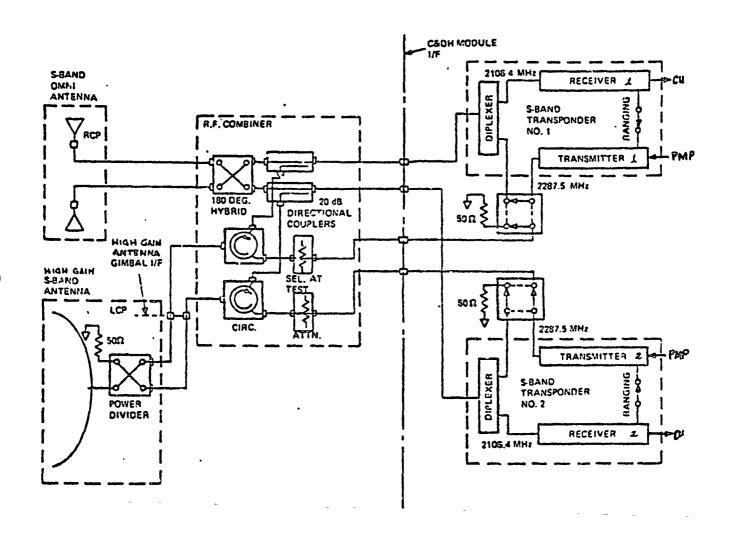
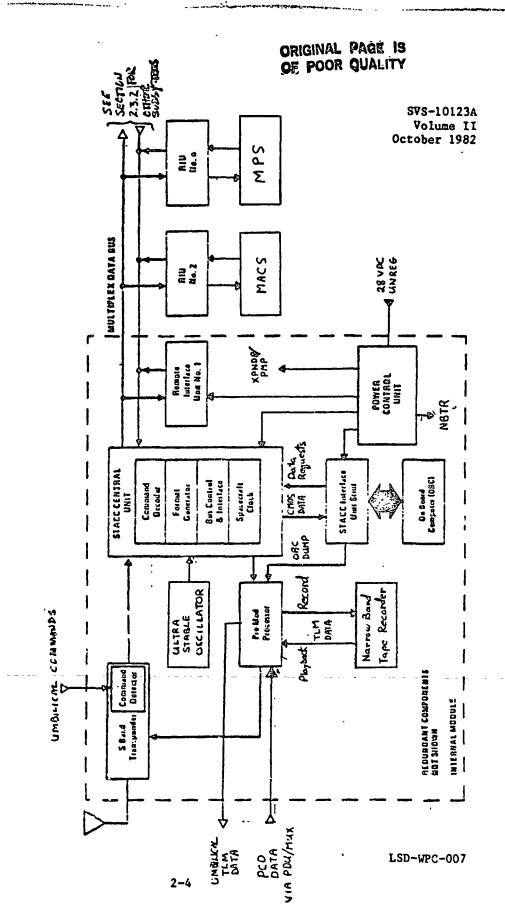


Figure ? -1. S-Band Transponder and Antenna

Telemetry is sampled in the subsystems by the Remote Interface Units (RIU) and passed to the Format Generator and/or computer over the Multiplex Data Bus, Figure 2-2. From the C&DH formatter, the telemetry data is routed to the Pre-Modulation Processor (PMP), and in turn to the transponder. If requested, telemetry is channeled to the OBC via the STACC Interface Unit (STINT). The OBC requests and stores these inputs at the appropriate time. All telemetry is supplied to the transponder through a PMP. The PMP may be commanded to supply realtime spacecraft telemetry to the Narrowband Tape Recorder (NBTR) for subsequent playback on the high rate channel. Also, when commanded, the payload correction data is supplied to the PMP from the PCD formatter in the PDU. Both PMP's can be turned ON simultaneously with an associated transponder and telemetry routed to both the TDRS and GSTDN/TGS/Foreign Stations simultaneously.

Flight Spacecraft time (GMT) is included in the realtime spacecraft telemetry stream from the DPU which supplies a 52 bit time code in BCD. Also, the CU supplies the OBC with a 24 bit (binary count) time code via the realtime spacecraft telemetry stream. The OBC uses least significant 18 of these bits for Stored Commands and Time Tags for Absolute and Relative Time Commands Processing with LSB equal to 1.024 seconds. The DPU supplies both the TM and MSS with the BCD time code as discussed in SVS-10126, Data Format Control Book, Volume V, (Payload).



Pigure 2-2. Simplified Block Diagram of the CaDR Subayatem

The S-Band OMNI downlink characteristics are as follows:

1. Frequency - 2287.5 MHz

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- 2. Polarization Right Hand Circular (RCP)
- 3. Transmitter Power 5 watts +1 dB
- 4. Beamwidth (Coverage) +63.8 Deg fr. NADIR (100%) GSTDN
 +116.2 Deg fr. Zenith (84%) TDRSS (return)
 OMNI Total Sphere (85%) Requirement
- 5. Bandwidth 3 MHz
- 6. Antenna Gain -6 dBi (minimum over 80% of sphere)

The S-Band TDRS High Gain link characteristics are as follows:

- 1. Frequency 2287.5 MHz
- 2. Polarization Left Hand Circular (LCP)
- 3. Transmitter Power 5 watts +1 dB (+6.9 dBw)
- 4. Beamwidth half power, 5 degrees
- 5. Bandwidth 6 MHz
- 6. Antenna Gain +28 dB

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2.1.1 TELEMETRY DATA CHARACATERISTICS

2.1.1.1 Modulation

;

The modulation techniques are different for GSTDN and TDRS as summarized in Table 2-1 and described below:

1. GSTDN

- a. The realtime spacecraft telemetry data is biphase-S, phase shift keyed, phase modulated (BiG-S/PSK/PM) on a 1.024 MHz subcarrier via the OMNI antenna. Twenty percent of the power is in the residual carrier. Realtime spacecraft telemetry is transmitted simultaneously with ranging data if desired.
- b. The high rate channel telemetry is BiO-S/PM modulated directly on the baseband.
- c. The GSTDN ranging is PM modulated.

2. TDRS

- a. The realtime spacecraft telemetry data is NRZ-M convolutionally coded (length-7), pseudo-noise code (PN) and transmitted independently on the "I" and "Q" c...annel as Staggered-Quadrature-Phase-Shift-Keyed (SQPSK) on the S-Band Return Link.
- b. The high rate channel telemetry is NRZ-M convolutionally coded (length-7), PN coded and transmitted on the "Q" channel only while realtime spacecraft telemetry is transmitted on the "I" channel simultaneously.

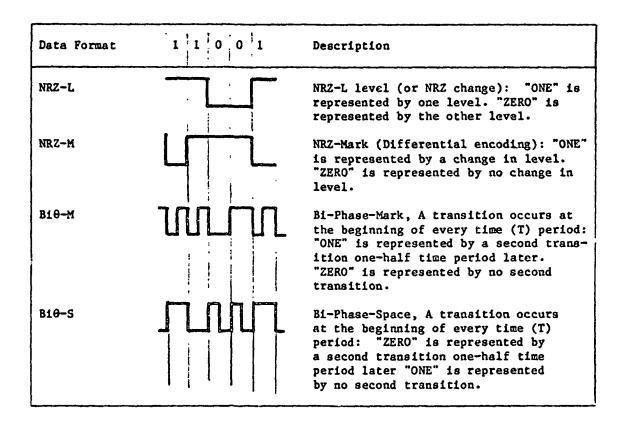
Bi-phase-S and Nonreturn-to-Zero data formats are described and shown in Table 2-2.

TABLE 2-1 OPERATIONAL MODES, CADH SUBSYSTEM (TELEMETRY)

CHANNEL (2)	0	8 kbps (TLM) ⁽¹⁾	1 kbps (TLM) ⁽¹⁾	32 kbps (08C, PCD) ⁽¹⁾	128 kbps (NBTR) ⁽¹⁾	SUBCARRIER ⁽³⁾ 8 kbps ⁽⁵⁾		RIGINAL POOR	PAGE IS QUALITY
CHAN	1	8 kbps (TLM) ⁽¹⁾	1 kbps (ТLM ⁽¹⁾	8 kbps (TLM) ⁽¹⁾	8 kbps (TLM) ⁽¹⁾	BASEBAND 32 kbps (4)	256 kbps(4)	-	РИ/SQPSK LS, RESPECTIVELY
	TORSS	MA	SSA	SSA			STATIONS		72 (LENGHT-7)
	LANDSAT ANT.	HIGH GAIN to	OPPNI to	HIGH GAIN to		QMN1 to			NYOLUTIONAL CODE, RATE 1/2 (LENGHT-7) PW/SQPSK POWER RATIO IS 4:1 IN Q AND I CHANNELS, RESPECTIVELY ER IS 1.024 MHz /PM /PSK/PM
TORSS MODE		A. NORMAL	B. DEPLOYMENT, ORBIT ADJUST OR BACKUP SAFEHOLD	C. HIGH RATE		2. GSTDN/TGS/FOREIGN MODE A. NORMAL			NOTES: (1) NRZ-M/CONYOLUTIO (2) RELATIVE POWER R (3) SUBCARRIER IS 1. (4) BI Ø - S/PM (5) BI Ø - S/PM

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Table 2-2. Data Bit Stream Formats



The TDRSS Ground Station generally demodulates the "Q" channel. The "Q" to "I" channel power ratio is 4:1. The "I" channel is demodulated for telemetry when either the OBC data/dump, PCD formatter data or the NBTR playback data is transmitted on the "Q" channel.

2.1.1.2 Bit Rate

The output bit rate via the Pre-Modulation Processor to the transponder is a function of the selected data source, data bit stream used, spacecraft mission phase, and receiving site as shown in Table 2-3.

Table 2-3. Telemetry Bit Rate and Type

Telemetry Type	Data Source	Bit Rate	Receiving Site
Realtime Spacecraft	CU	1 Kbps	TDRSS
·		8 Kbps	TDRSS, GSTDN or Foreign Stations
On-Board Computer Data/Dump	OBC/STINT	1 or 32 Kbps	TDRSS or GSTDN
Payload Correction Data	PCD Formatter	32 Kbps	TDRSS, GSTDN or Foreign Stations
Narrowband Tape	Natr	128 Kbps	TDRSS
Recorder Playback		256 Kbps	GSTUN

All signal inputs to each PMP include NRZ-L data and required clocks. The PMP receives OBC data dump and required clocks from either of two STACC STINT's with rates command selectable either at 1 or 32 Kbps (Landsat-D uses 32 Kbps); the PMP receives realtime spacecraft telemetry which consists of NRZ-L data and clock from either STACC/CU with rates command selectable at 1 or 8 Kbps; the PMP receives PCD Formatter data in a similiar fashion except the source is from the power distribution unit (PDU) which contains the PCD Formatter; lastly, the PMP receives realtime spacecraft telemetry playback data from the NBTR with data rates at 128 Kbps or 256 Kbps with the appropriate clock signal. The C&DH subsystem can be commanded to select bit rates of 1, 2, 4, 8, 16, 32 or 64 Kbps for realtime spacecraft telemetry, however, telemetry rates must be 8 Kbps only for OBC timing purposes. Telemetry rate of 1 Kbps can be used for emergency operations but the OBC timing may not be valid.

2.1.1.3 Word Length

The word length is eight bits assembled into analog, passive analog, bi-level (discrete) or serial digital words.

2.1.1.4 Telemetry Matrix Capacity

The telemetry subsystem provides 64 channels for data inputs per RIU and an additional 64 channels per Telemetry Multiplexer/Expander Unit (EU) and used as follows:

1. 64 available for analog or

- 2. 64 available for bilevel or
- 3. 16 available for serial digital or
- 4. 16 available for conditioned passive analog or
- 5. Combination of the above. (See Table 2-10)

There are nine RIU's (some have EU's) on Landsat-D which acquire data from the subsystems and route it to the CU via the Multiplex Data Bus (MDB). The C&DH formatter retrieves the appropriate RIU channel data at the correct time for insertion into the realtime spacecraft telemetry stream (matrix) by using one of the CU's two programmable read-only-memories (PROM) which contains an RIU and channel number for each telemetry word.

2.1.1.5 Format Selection

Two PROM devices are used in the CU for Engineering and Mission formats. Mission and engineering formats are nearly identical except that the mission format contains more TM Sensor and GPS housekeeping data whereas the engineering format contains more modular attitude control subsystem (MACS) and propulsion module (PM) data. The mission format is intended for use while the spacecraft is in the normal on-orbit imaging configuration during payload activity using the 8 Kbps telemetry rate. The engineering format is intended for use when the spacecraft is being launched, in an orbit adjust or safe hold activity. A third way to control the realtime spacecraft telemetry stream is by the OBC generated format which is variable and based upon a memory upload used by the OBC to control the format in lieu of the PROM's. A fourth type of format available is

an accelerated multiplex dwell format for a selected telemetry word repeated in all non-fixed columns continuously. The latter two formats are not planned for Landsat-D normal operations.

2.1.2 TELEMETRY MATRIX CONSTRUCTION

2.1.2.1 Telemetry Data Format

The telemetry format for the C&DH Subsystem is a 128 x 128 row/column matrix. A minor frame (row) contains 128 eight bit words (columns) and is illustrated in Figure 2-3. A major frame is comprised of 128 minor frames. The format starts in row 0, column 0 and proceeds sequentially through the matrix until the final word in row 127, column 127 is transmitted. This completes a major frame. The most significant bit (MSB) is transmitted first in a minor frame word.

2.1.2.2 Minor Frame

Each minor frame contains 128 words. The first three words are used for the minor frame synchronization. The minor frame counter is located in relative word location 65 (Frame Counter) (Figure 2-4). These words are located in fixed word locations as shown in Table 2-4. At the 8 Kbps rate, a word period is 1 millisecond. At the 1 Kbps rate, a word period is 8 milliseconds.

	100127		ORIGINAL PAGE IS OF POOR QUALITY	SVS-10123A Volume II October 1982
	96 87 88 99	FIXED HORDS	പ്രണണം സമയവയാടുൻ	
	6995	(8) (8)		·
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	68 67	72 .	CO T → C	Matrix Construction
I FOREAT	.63 64 65	FIXED	NG4UWUG4F≻ U⊣CUX © ⊣N©	. Matrix Cu
MAJON FRACES FORMAT	35 366		08U G<=< >080 ~0	Telemetry
į	7	HORDS	N C → N N S ← U N	B 2-3.
	32 33	FIXED		Pigure.
	3	-		-
	2	FIXED MORDS	FRAME SYNC TA BRITS)	
			0=0	1 cp 1 mg 007

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Table 2-4. Fixed Column Assignments

Word No.	Bit No.	Function
0-2		Sync Word (FAF320 in REXADECIMAL)
3	0, 1, 2 3, 4 5 6 7	Bit Rate Format ID Central Unit A/B Real Time/Computer Dump Data CU Signal Presence
32		Subcom
33		Subcom
3/,	0 1 2 3 4, 5 6, 7	Receiver (Rcvr)-A Lock Status Rcvr-A TDRSS/STDN Mode Rcvr-B Lock Status Rcvr-B TDRSS/STDN Mode Det. A Inlock, Det. B Inlocks CU-A Command Reject, CU-B Command Reject
35		Computer Data Word (Report Identifier)
64		Spacecraft Clock (8 LSB from selected CU, 16 MSB in Subcom)
65		Frame Counter (Figure 2-4)
66		Command Counter (Selected CU)
67	0 1 to 7	Dwell Mode Dwell ID
96-99		Subcom

2.1.2.3 Major Frame

The major frame contains 128 minor frames. The major frame duration is 16.384 seconds at 8 Kbps and 131.072 seconds at the 1 Kbps rate.

2.1.2.4 Fixed Columns

There are 16 fixed columns, six of which can be used for subcommutated words in minor frame words 32, 33, 96, 97, 98 and 99. The remaining 10 fixed columns are described below and in the following paragraphs:

1. Word #3 - Bit rate (bits 0,1 and 2):

000 = 1 Kbps

001 = 2 Kbps

010 - 4 Kbps

011 = 8 Kbps

100 = 16 Kbps

101 = 32 Kbpe

110 = 64 Kbps 11.1 = 128 Kbps

- Format ID (bits 3 and 4):

00 - CU Flexible (not used on Landsat-D).

Ol = Format I (Engineering)

10 = Format II (Mission)

11 = On-Board Computer Controlled

- Central Unit A/B (bit 5):

0

- Realtime Time/Computer Dump Data (bit 6):

- On Board Computer Dump

- Realtime Spacecraft via MDB (always 1 for Landsat-D)

```
- CU Signal Presence (bit 7):
   0 - Not rejected
   1 ~ Rejected if both CU A and B reject the command
   Word #34 - Receiver A Lock Status (bit 0):
   1 = locked
   0 = not locked
- Receiver A TDRSS/GSTDN Mode (bit 1):
   O - GSTDN
   1 - TDRSS
- Receiver B Lock Status (bit 2):
   1 = locked
    0 = not locked
 - Receiver B TDRSS/GSTDN Mode (bit 3):
    0 = GSTDN
    1 - TDRSS
 - Detector A Inlock, Det. B Inlock Status (bit 4,5)
    0 - locked

    not locked

 - CU-A Command Reject, CU-B Command Reject (bit 6,7):
    0 = Accept
    1 = Reject
3. Word #35 - Computer Data Word ID (8 bits):
     Identifies the OBC Telemetry Report number for this minor frames 25
     word OBC Report (See Section 2.5)
```

 Dweil ID (bits 1-7) which is the minor frame word number (4-127) to be repeated in the dwell mode. This is not normally planned for use in Landsat-D.

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Word #67 - Dwell Mode (bit 0):

0 = Dwell mode OFF
1 = Dwell mode ON

2.1.2.5 Non-Fixed Columns

There are 112 non-fixed columns for the assignment of subsystem telemetry data. The matrix allocation of Columns/Subcom words are described in Section 2.4, Telemetry Matrix Assignments. The On-Board Computers contribution to the 25 minor frame words (columns) is described in OBC Reports, Section 2.5.

Certain types of OBC contribution to telemetry data are not available directly from the subsystems (e.g., Flight Segment attitude errors). These are derived within OBC and data accessed in the subsystem(s) by the OBC via "Computer Address" words through the RIU. Since direct telemetry acquisition of data via "Computer Addressed" gates can compromise an OBC computational cycle, requests for these data are made through the OBC. See reference item number 3 in Section 5.

2.1.2.6 Subcommutation

There are a total of six subcommutated words in a minor frame. The cycle length of the subcommutation is one major frame. The 8-bit (0-255) minor frame counter is used to identify the subcom words. When using Format I or II, the format of the subcom words is controlled by the memory device identical to that used for minor frame format control. Subcom formats are the same for both memory controlled minor frame formats. When operating in the computer generated minor frame, the subcom formats are controlled by the OBC. See Section 2.4, Telemetry Matrix Assignments.

2.1.3 TELEMETRY CONTROL WORDS

2.1.3.1 Synchronization

The first three words in each minor frame are used for minor frame synchronization. These 24 sync bits are described as follows:

WORD: 0 1 2
MSB LSB

11111010 11110011 00100000

Since the telemetry bit stream is transmitted MSB first, this sync pattern is received as illustrated. In hexadecimal, the sync pattern is FAF32016.

2.1.3.2 Frame Counter

Word 65 of the minor frame is the frame counter. At the end of each minu frame the counter is incremented by one, and the new value (n+1) is placed in word 65 in the subsequent minor frame. This process is continued until a maximum count of 255 is reached and the process repeated. Only the last seven bits are needed to determine the frame counter contents for subcom word ID (0-127). The bit pattern sequence is shown in Figure 2-4.

2.1.3.3 <u>Time Code</u>

The STACC/CU apacecraft clock counter is 24 bits (binary count) in length. The eight least significant bits (LSB) are located in the fixed telemetry column in word location 64 of the telemetry matrix. The 16 most significant bits (MSB) are located in two additional telemetry words (86 and 87). The output of the CU spacecraft oscillator (4.096 MHz) is counted down to provide a 24-bit spacecraft time code with LSB resolution of 1.024 seconds. Each CU has its own oscillator. Additionally, an ultra stable external oscillator is command selectable. external oscillator is primarily used due to the Digital Processing Unit (DPU) stability requirements for generation of TM (52 bits) and MSS (48 bits) time codes discussed in SVS-10126, Data Format Control Book, Volume V, (Payload). Also, the Digital Processing Unit (DPU) generates a 52 bit time code which is put in the realtime telemetry stream in word location 32 in minor frame numbers 0-7 each major frame as shown in Table 2-36. This DPU time code is also put in the PCD data stream as shown in Figure 2-9 and described in 2.2.6.2.9 as it appears in PCD format word 72. In either case, the DPU time code is referenced to the major frame sync pulse which marks the beginning of the major frame (minor frame zero, word zero-MSB).

The CU (24 hit counter) clock is incremented at the beginning of the major frame and every Yth minor frame as a function of telemetry rate. At a telemetry rate of XKbps, the spacecraft clock increments by 1 every Xth minor frame. In the 1 Kbps mode the spacecraft clock will increment by 1 every minor frame and in the 8 Kbps mode it will increment every 8th minor frame.

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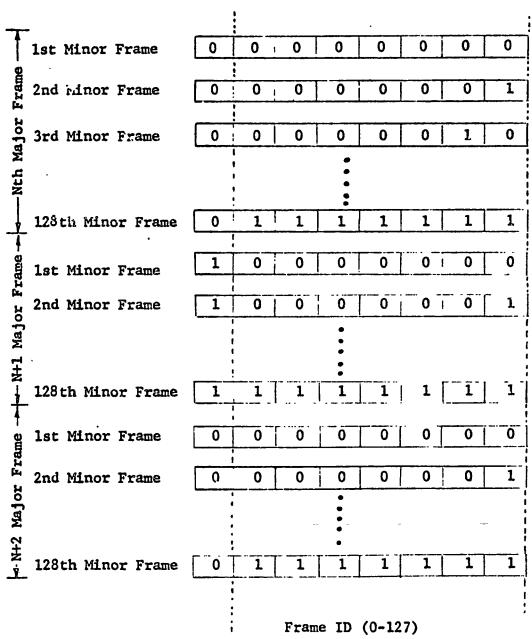


Figure 2-4. Frame Counter ID Bit Pattern

2.2 TELEMETRY FORMATS

2.2.1 CU PROM ENGINEERING FORMAT

The Engineering format, designated Format I, is for initial spacecraft operations subsequent to a delta launch during deployment, Safe-Hold mode or when an orbit adjust operation is conducted. Engineering format contains subsystem data as shown in Section 2.4, Telemetry Matrix Assignments.

2.2.2 CU PROM MISSION FORMAT

The normal on-orbit mission telemetry format is defined as format II and both formats are independent of telemetry rate. Although other bit rates are possible, the 8 Kbps rate is used since it is consistent with the quantity of spacecraft telemetered data, the link margins achieveable at 8 Kbps rate and the restrictions of power flux density when the flight segment is transmitting to the TDRS and the earth is near the line of sight of the TDRS high gain antenna beam. Mission format contains subsystem data as shown in Section 2.4, Telemetry Matrix Assignments.

2.2.3 ON-BOARD COMPUTER TELEMETRY FORMAT

The CBC provides a capability for a third flexible format, but not planned for use, based upon a computer memory load. When operating in the computer generated minor frame format, the subcom formats are controlled by the computer instead of the CU PROM.

2.2.4 ACCELERATED MULTIPLEX (DWELL) FORMAT

The accelerated multiplex format can insert any single non-fixed telemetry point from the telemetry matrix column (excluding 0 through 3, 32 through 35, 64 through 67 and 96 through 99 - fixed columns) into all of the 112 non-fixed columns. This mode provides an operational analysis tool since it can be initiated through a single serial magnitude command to the CU. It is also referred to as the "Dwell" mode.

2.2.5 OBC DUMP FORMAT

The OBC can dump any 4,096 words of memory in units called memory banks. Less than 4,096 words can also be dumped or loaded. Each dump is repeated at least four (4) times. The memory dump goes to the PMP via the STINT. Each NSSC memory word dumped requires 32 bits, as shown in Figure 2-5. Thirty-two, 3?-bit words make up a minor frame (1024 bits), within which there are four groups, each having eight 32-bit words (256 bits). The first word of each group has a special function, as shown in Figure 2-6. This special function means that only 28 memory dump words can be put in each minor frame. Therefore, a copy of one

complete fixed bank dump cannot be completed in an integral number of minor frames. Each succeeding dump of the fixed bank begins with the first word (of the second copy of the dump) following immediately after the last word of the preceding dump, and this continues with succeeding dumps until all four dumps have been completed. Figure 2-6 shows the end of the first dump and begining of the second for a hardware dump of a fixed bank. For a dump of less than 4096, X5 and X6 (Figure 2-6) would appear in a different frame position. The minimum number of words that can be dumped is 1024. Therefore, dumps of less than 8 words will be increased to 8 words then repeated until 1024 total words are dumped, dumps of 8 to 256 words will be repeated until 1024 total words are dumped, dumps of greater than 256 will be repeated 4 times.

The OBC dump can be controlled by the hardware or software and is described in Paragraph 2.3.3.4.

ORIGINAL PAGE IS OF POOR QUALITY Odd Parity Bit 3 8 23 24 25 26 27 28 29 12 BIT NSSC ADDRESS Twelve LSBs of the 16 bit NSSC address of the data word in bits 2-19 Eighteen bit NSSC data word. The format of dump data is listed below: 22 10 11 12 13 14 15 16 17 18 19 20 Description Always 1

2

NSSC DATA

& Always

9 ø

9

~

STINT Dump Word Format FIGURE 2-5

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2-19

20-31

32

This bit is adjusted so that the number of 1 bits in the word is always odd.

ORIGINAL OF POOR	PAGE IS QUALITY MINOR FRAME 1	SVS-10123A Volume II October 1982
<u>x1</u> <u>x2</u> <u>x3</u> <u>x4</u>		1-8 (32 bit words)9-1617-2425-32
	MINOR FRAME 14	.7
<u>x1</u>	<u> </u>	4673 - 4680
<u>x2</u>	<u>X5 X6</u>	4681 - 4638
<u>x3</u>		4689 - 4696
<u> </u>		4697 - 4704
Xi	MF SYNC Contains a 32 bi	t sync code (FAF320 _{Hex} + 8 zeros)
X2	BANK ID (of the fixed bank)	Contains the bank identifier of the NSSC word dumped in the preceding 32 bit word
	12	25 24 25 26 29 30 51 5Z 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	always 1	Hardware dump —→ Bank ID parity Software dump — > 0000
X3 X4 X5	Subcom Counter Subcom Counter End of first dump	All ones parity bit zero All ones parity bit zero The 4096th word of the first copy of the dumped bank appears
Х6	Start of second dump	here (position shown-hardware dump) The first word of the second copy of the dumped bank appears here. (position shown-hardware dump)

X5 & X6 may be in another position for software dump of less than 4096 words

2.2.6 PAYLOAD CORRECTION DATA (PCD) FORMAT

The PCD telemetry matrix consists of 128 words (minor frame) as shown in Figure 2-7 by 128 rows (major frame). The words in the minor frame contain Angle Displacement Sensor (ADS) and Gyro data whereas the subcom (word 72 only) contains attitude, gyro drift, ephemeris, time code, ADS temperature, PCD multiplexer status as well as TM housekeeping Telemetry data. The PCD Formatter telemetry data is transmitted over the high rate channel (32 Kbps) to GSTDN or TDRS. The PCD Formatter output is also sent to the DPU for insertion into the TM multiplexer payload data stream as described in SVS-10126, Data Format Control Book, Volume V, (Payload). A minor frame is 32 Msec as shown in Figure 2-8 and a major frame is 4.096 seconds. Only one word is subcommutated (word 72) as shown in Figure 2-9.

	•
DATH	werd
SYNC	0,1,2
ADS 1	3,4
ADS Z	5,6
ADS3	7,8
	9
	10
ADS 1	11,12
ADS 2	13, 14
ADS3	15, 16
Gyro (Fig 2-8)	17
	18
ADS 1	19,20
ADS2	21,22
ADS3	23, 24
	25,26
ADS 1	27,29
ADS 2	27, 30
ADS 3	31,32
64RO (F. & 2-8)	33
	34
ADS 1	35,36
ADE Z	37, 38
ADSE	39,40
	41,42
ADS 1	43,44
ADS 2	45,46
ADS3	-47,48
GYRO(Fig 2-8)	49
	50
ADS 1	51,5%
ADS Z	53, 54
ADS3	55,56
	57,58
ADS 1	59,60
ADSZ	61,62
ADS 3	63,64

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DATA	WORD DE	Volum II tober 1982
MFID	6 5	
ADS 1	64,67	
ADSZ	68,69	
ADS3	70,71	
SUB COMM(Fig 2-9)	72	
	73	
ADS 1	74,75	
ADSZ	76,77	
ADS3	78,79	
	80	
6450(Fig 2-8)	81	
ADS 1	82,83	
ADSZ	84,85	
ADS 3	86,87	
	88, g()	
ADSI	90,91	
ADSZ	9z,93	
ADS3	94,75	
	96	
GYRO(Fig 2-8)	97	.
ADS 1	.98,99	
AUSA	100,101	
ADS3	102,103	
	104,105	
ADS1.	106, 107	
ADS2	103,109	
ADS-3	-110,-111	•
	:12	
GYRO(Fig Z-6)	113	
ADS 1	114, 115	
ADSZ	116,117	
ADS3	118,119	(1
	120, 12!	
ADS 1	17.2,123	

= NO DATA - ZERO FILL

124,125

ADS Z

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2.2.6.1 Data Sources

The format contains the following types of data from several sources:

- 1. Angle Displacement Sensor (from ADS)
- 2. ADS Temperature (from ADS)
- 3. Gyro Data (from OBC)
- 4. Gyro Drift Data (from OBC)
- 5. Attitude Estimate (from CBC)
- 6. Ephemeris (from OBC)
- 7. TM Housekeering Telemetry Data (from OBC)
- 8. Spare Telemetry Data (From OBC)
- 9. S/C Time Code (from DPU)
- 10. Formatter Status (generated in the Formatter)
- 11. Sync (generated in the Formatter)
- 12. MFID (generated in the Formatter)
- 13. Telemetry Frame Correlation (generated in the Formatter)

The location of the data types is further shown in Figure 2-8 and Figure 2-9.

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		WORD IN MINOR FRAME										
Mi.nor Frame		17		33		49		81		97		113
0 1			-	$\sum_{n \geq 2}$	_	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ı	1 ₁ _3 ₄	_	$-\frac{1}{3}$	-	_2, _ 3, ₃
2		X		X		X		1,		12		2,
3	1	13		22	-	23	-	31	_	32	-	3 3

Figure 2-8. Gyro Data

2.2.6.2 Data & Timing

2.2.6.2.1 Angle Displacement Sensor - Each axis of the ADS will be sampled every 2 msec (8 words). The sample will be converted to a 12 bit word and inserted in 2 consecutive words of the format, with the 4 MSB's of the first word set to zero. The format and range of the ADS DATA is as follows:

MSB LSB 1

1ST WORD 2ND WORD IN MINOR FRAM

VOLTAGE	ANGLE (MICRORADIANS) PITCH, ROLL & YAW	BIT PATTERN
+5.0000	+250	0000 0000 0000 0000
0.0000		0000 1000 0000 0000
-4.9976	-250	0000 1111 1111 1111

The data will be sampled during the odd numbered word time preceding the first of the two data words. For example; ADS axis #1 will be sampled during the following word times of each PCD Minor Frame.

1	33	65	97
9	41	73	105
17	49	81	113
25	57	89	121

2.2.6.2.2 ADS Temperature - Up to four ADS related temperatures will be sampled once a PCD Major Frame (4.096 sec). Each sample will be converted to a 12 bit word and inserted in 2 consecutive words of format, with the 4 MSB's of the first word set to zero, as shown below. As above, the data will be sampled in the word time preceding the data word. That is, ADS Temperature #1 is placed in Word 72 minor frame 108 and 109 and sampling time is word 71. The formatting and range of ADS temp data is shown below:

MSB LSB
0000XXXXXXXXXXXX X = DATA BIT

Data	Minor Frame	Word 72
ADS Temp #1	108 .	MSB 0000XXXX
•		LSB
.•	109	XXXXXXX
ADS Temp #2	110	
-	111	Same Format
ADS Temp #3	112	
-	113	As Above
ADS Temp #4	114	
•	115	
Temp	MSB LSI	B
+50 ⁸	00000000000000000)

0000111111111111

o°c

2.2.6.2.3 Gyro Data - Each axis of both DRIRU's is sampled, by the OBC, every 64 msec. The OBC will send the data from the DRIRU it is using, to the Formatter. The data will consist of a 24 bit word for each axis (a total of 72 bits). The timing of the data sampling, transfer, and read out in the PCD

format, is shown in Figure 2-10.

The word format of the Gyro data for each axis is: (2's complement word)

	81	97	17	x
WORD	113	33	49	Y AXIS
	81	97	113	Z AXIS
	MSB		LSB	(See Fig. 2-8)
	222		20	•
	sxxxxxx	XXXXXXX	xxxxxxx	(0.05 ARC-SEC/COUNT)(LOW RATE)
	7 MSB	MIDDLE	8 LSB	(0.8 ARC-SEC/COUNT)(HIGH RATE)

Each 1 msec data sampling period is initiated by that 16 msec interrupt to the OBC which occurs 36 msec after the start of an even numbered PCD minor frame. (That is, 4 msec after the start of each odd numbered PCD minor frame.) (Figure 2-10.) The start of every fourth PCD major frame is coincident with the start of the TLM major frame, and this time is contained in subcom word 72, minor frame 96 through 103, thus the time of the start of every gyro data sampling period can be determined. Normal imaging in operations uses the lower rate data.

In addition, the relationship between the sampling period, transfer, and read out is also fixed. (See Figure 2-17).

That is, with reference to Figure 2-8, the data present in:

WORD	MINOR FRAME	AXIS	
81 & 97	2	x	
17	3	x	
113	2	¥	
33 & 49	3	¥	
81, 97 & 113	3	Z	

was sampled by the OBC in the period starting at word 16 of minor frame 1.

The data is transferred to the Formatter in the period starting 4 msec after the start of the next PCD minor frame.

2.2.6.2.4 Gyro Drift Data - The drift calculation is performed by the OBC approximately once a minute. The data consists of 3 x 32 bit words. The data will be transferred to the Formatter during the 4th transfer period (see Figure 2-11), between the Attitude data and the TLM spares data.

The format and frame position of the gyro drift data is: (2's complement word)

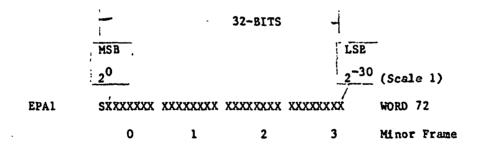
		MSB 2-17 SXXXXXXX	xxxxxxx	XXXXXXXX	LSB ₂ -47 xxxxxxxx	(Scale -16)
	ROLL	16	17	18	19	THETBX*
MINOR	PITCH	20	21	22	23	THETBY
FRAME	YAW	24	25	26	27	THETBZ
* OBC TLM	Report #1	0				

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The data will appear in word 72 of minor frames 16 through 27 of the PCD major frame that starts at the TLM Major Frame Pulse (see Figure 2-9). Since the data will be sampled every 16.384 seconds, it will repeat 4 times between each calculation.

2.2.6.2.5 Attitude Estimate - The OBC calculates a FS Attitude Estimate every 512 msec. The OBC will send 1 out of 8 of these sets of data to the Formatter, starting with that one calculated 52 msec after the TLM Major Frame Puise and every 4.096 sec after that (once a PCD major frame) (See Figure 2-11).

Attitude is Euler parameters (EPA1, EPA2, EPA3, EPA4) that specify vehicle attitude relative to ECI frame (non-dimensional). OBC double precision word (36 bits) is compressed to 32 bits and has the following format: (2's complement word)



Repeated for EPA2, 3,4 in Minor Frames 4 through 15.

The data will appear in word 72 of minor frames 0 through 15 of each PCD major frame (see Figure 2-9).

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2.2.6.2.6 Ephemeris - This calculation is made by the OBC when the Attitude calculation is made. In this case, only 1 out of 16 sets of data will be sent to the Formatter (that is, every other PCD major frame - 8.192 sec).

The data consists of 192 bits transferred to the Formatter after the Attitude data in transfer periods 1 and 3 (see Figure 2-11).

Ephemeris is 32 bit binary words defining X,Y,Z,X,\forall,2 (meters and kilometers/sec respectively) in ECITOD coordinates. The data are 36 bit OBC double precision words compressed to 32 bits by dropping the second sign bit and the 3 least significant bits. The scale factor is 23 for posit n and 3 for velocity. The format of this data is as follows: (2's complement words)

WORD 72	MSB 2 ²² SXXXXXXX	XXXXXXX	xxxxxxx	LSB 2 ⁻⁸	SCALE = 23	
POSITION						
x	16	17	18	19	MINOR	EOGBRF (1)*
Y	20	21	22	23	FRAME	EOGBRF (2)
z	24	25	26	27		EOGBRF (3)

* OBC TLM Report #13 EPHO1

WORD 72 22 2-28
SXXXXXXX XXXXXXXX XXXXXXXX SCALE - 3

							VELOCITY
/F (1	EOGBVF	MINOR	31	30	29	28	x
/F (2)	EOGBVF	FRAME	35	34	33	32	¥
VF (3)	EOGBVE		39	38	37	36	Z

^{*} OBC TLM Report #13 EPHO1

The data will appear in word 72 of minor frames 16 through 39 of every other PCD major frame (see Figure 2-9). These major frames will carry the "1" and "3" identifier in place of Time Code.

2.2.6.2.7 TM Housekeeping Telemetry - Up to 248 bits of TM Housekeeping Telemetry data may be stripped out of the realtime telemetry format by the OBC and sent to the Formatter. The data will be buffered at the fifth 16 msec interrupt after the start of a telemetry major frame, and transferred to the Formatter following the Attitude data in transfer period 2 (see Figure 2-11).

The data will appear in word 72 of minor frames 16 through 45 of the third PCD major frame after the TLM Major Frame Pulse (see Figure 2-9). This major frame will carry the identifier "2" in place of Time Code. For time correlation, it should be noted that the data will be from the previous TLM major frame.

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The TM Telemetry will consist of:

WORD #	USER ID	DESCRIPTION
1	TM-59	Blackbody Temp
2	TM-60	SI FPA Temp
2 3 4	TM-61	Calibration Shutter Temp.
4	TM-62	Backup Shutter Temp
5	TM-69	Baffle Temp
6	TH-70	Cold FPA Temp.
7	TM-67	CFPA Control Temp
8	TM-95	CAL Lamp Filter Temp
9	TM-94	SLC Temp.
10	TM-86	CAL Shutter Temp.
11	TH-83	Ambient Preamp Temp (Even)
12	TM-75	Band 6 Post Amp Temp
13	TM-73	Relay Optics Temps
14	TM-72	Cold Preamp Temp
15	TM-71	Ambient Preamp Temp (Odd)
16	TM-101	Serial Word A
17	TM-102	Serial Word B
18	TM-103	Serial Word C
19	TM-104	Serial Word D
20	TM-105	Serial Word E
21	TM-106	Serial Word F
22	TM-107	Serial Word G
23	TM-108	Serial Word H
24	TM-112	Serial Word L
25	TM-79	Pricary Mirror Temp
26	TM-80	Primary Mirror Mask Temp
27	TM-81	Secondary Mirror Temp
28	TM-82	Secondary Mirror Mask Temp
29	TM-84	Telescope Housing Temp
30	TM-85	Telescope Baseplate Temp
31	TM-68	CFPA HTR Current

2.2.6.2.8 Spare Telemetry - Up to 176 bits of data may be stripped out of the realtime telemetry format or computed data by the OBC and sent to the Formatter in the same manner as the TM Housekeeping Data, except the 4th transfer period is used (see Figure 2-11).

The data will appear in word 72 of minor frames 28 through 49 of the first PCD major frame after the TLM Major Frame Pulse (see Figure 2-9). This major frame carries the S/C Time Code. The spare telemetry contains the following:

MINOR FRAME	FUNCTIONS (Number in HEX)
28	EPHEMERIS SOURCE ID 00 = GPS; 01 = UPLINK
29	ROLL GYRO ID 00 = GYRO 1; 01 = GYRO 2
30	PITCH GYRO ID 00 = GYRO 1; 01 = GYRO 2
31	YAW GYRO ID 00 = GYRO 1; 01 = GYRO 2 IRU Channel
	Gyro 1 Gyro 2
Roll Pitch Yaw	B A C C

The data will be from the TLM major frame that started 32.768 sec before the time given in the PCD major frame. If no spare telemetry data is sent to the formatter the field will be zero filled.

2.2.6.2.9 S/C Time Code - Time Code will be transferred directly from the DPU to the Formatter at the same time as it is transferred to the RIU for the TLM format. This transfer will occur during the first 1.024 sec after a TLM Major Frame Pulse.

The data consists of the full 64 bits (4 - Spacecraft ID, 52 - T/C, 8 - DPU Status) defining the time at which the TLM Major Frame Pulse occurred. The data will appear in word 72 of minor frames 96 through 103 of the first PCD major frame after the TLM Major Frame Pulse (see Figure 2-9). The time code appears as shown in Table 2-36. Though the PCD time code format is the same as the realtime format, word location is different. Realtime Telemetry location is word 32.

2.2.6.2.10 Formatter Status - 16 bits of Formatter status can be accommodated and will appear in word 72 of minor frames 116 and 117 of each PCD major frame.

The data consists of a frame error bit and ADS ground reference. The ADS ground reference voltage has the same scale and range as ADS data (-4.9976 to +5.000 volts). The format is as follows:

* FRAME ERROR BIT

1 = Expected TLM Major Frame Pulse either did not occur or did not line up with start of PCD Major Frame 1.

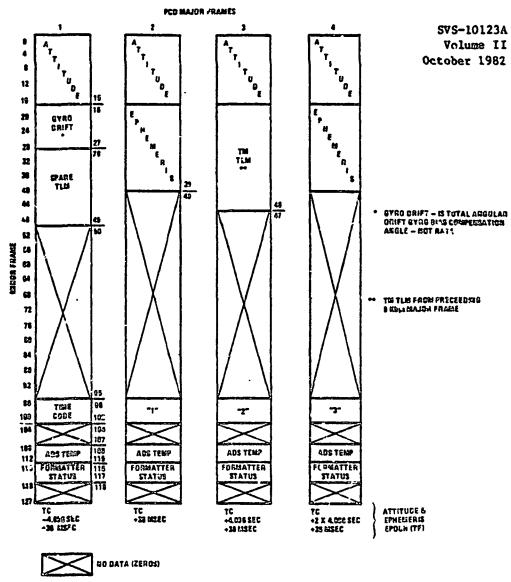
2.2.6.2.11 Sync - The same sync pattern used for the TLM data will appear in words 0 through 2 of each PCD minor frame. (FAF320 HEX)

2.2.6.2.12 MFID - A O to 127 count of minor frames will appear in word 65 of each PCD minor frame.

2.2.6.2.13 Telemetry Frame Correlation - Word 72 of minor frames 96 through 103 of the 2nd, 3rd and 4th PCD major frames of a four frame set (see Figure 2-8) will contain a unique identifier (1, 2 or 3).

2.2.6.3 PCD Data in Realtime Telemetry Stream

Data types, item numbers 2 through 9 in paragraph 2.2.6.1, are also contained in the realtime spacecraft telemetry stream for the purpose of MSG processing by foreign stations. The high rate channel PCD telemetry is essentially used to process Thematic Mapper payload data.



C8007010 - "Z"-

BIT PATTERN REPEATED EACH MINOR FRAME (I.E., IN MINOR FRAME OF THRU 103) 00000011 - "3"

THE ATTITUDE AND EPHEMERIS DATA EPOCH IS AS SHOWN AT THE BOTTOM OF EACH MAJOR FRAME NUMBERS 1, 2, 3 & 4 WHERE TO - Tops AT THE BEGINNING OF FRAME 1,

Figure 2-9. Sub Comm Data (Word 72)

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GYRO DATA (F. 82-8) 9-5msic 25.5 MIRC-1 t-lb resect #75mm ALL & GYED OUT PUTS GYR. DATA CYCLE 2 64 PREC STRIT OF ODD MISOR FRAME 1MSEC -0 - 1 PCD MINOR FR -- 36 MSEC -44477 TRANSFER FROM OBC DATA SMPL IL MALE. INTERRUPT TO OBC

Pigure 2-10. Gyro Data Timing

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1...

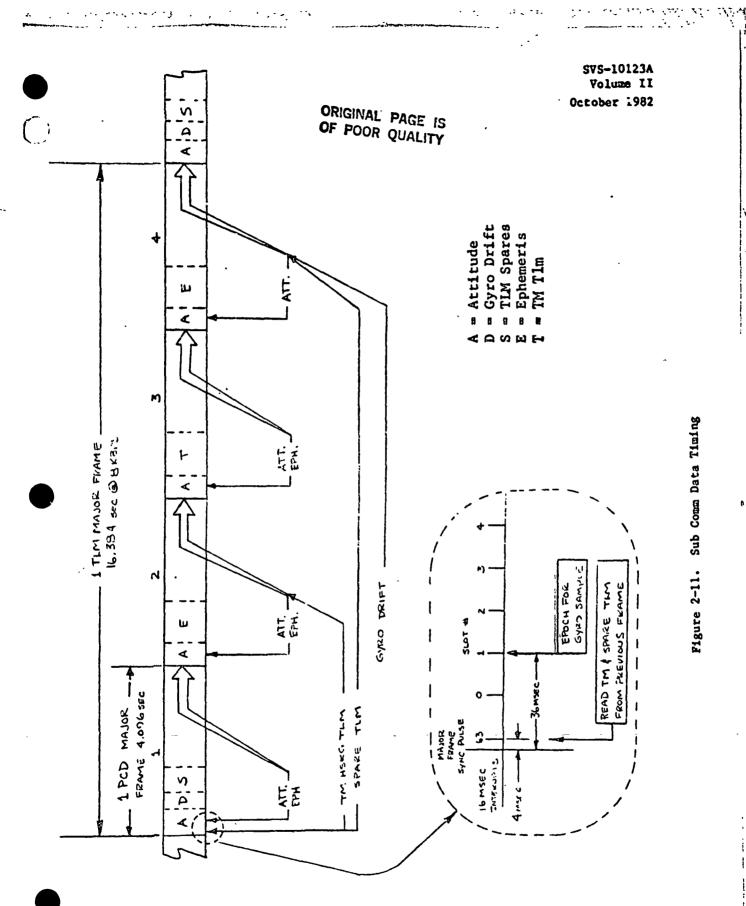


Figure 2-11. Sub Comm Data Timing

2.2.7 NARROWBAND TAPE RECORDER (NBTR) FORMAT

The NBTR records on 4 pairs of channels for redundancy. Playback is via one of the 4 pairs into a single output by command. The recording is in a forward direction (no reverse direction recording possible) and playback is in the reverse direction only. The format of the NBTR telemetry stream is identical to that shown in Figure 2-3 except that the last word of the matrix is transmitted first. Also, the LSB of a word is transmitted first. Therefore, the data output from the tape recorder during playback is reversed in time, (i.e., data bit stream recorded as 110 is played back as Oll). The recorder will only record 8 Kbps telemetry data. The tape recorder transmits the data bit stream to the PMP at a command selectable rate of either 128 Kbps or 256 Kbps in NRZ-L format and is converted to NRZ-M by the PMP before downlink.

2.3 COMMAND AND DATA HANDLING (C&DH) SUBSYSTEM

The C&DH subsystem contains the STACC Central Unit (CU), the STACC Interface Units (STINT), the Central Processor Units (CPU), Memories, transponders, receivers, the RF switching and the Pre-Modulator Processors (PMP) as shown in Figure 2-12. The C&DH Subsystem is responsible for acquiring and transmitting two data bit streams:

1. Realtime Spacecraft Telemetry:

- a. Rousekeeping (Subsystem and Sensor) Telemetry and
- b. Global Positioning System data (selected Data Files) and

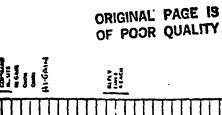
- c. Flight Spacecraft Time (DPU, CU/OBC, GPS) and
- d. Payload Correction Data (2 through 9 of 2.2.6.1)
- 2. High Rate Channel Telemetry:
 - a. Playback of Recorded Realtime Spacecraft Telemetry above or
 - b. Payload Correction Data or
 - c. On-Board Computer Memory Dump

2.3.1 TRANSPONDER

The transponders are capable of transmitting in the frequency range of 2200 to 2300 MHz. For the Landsat D mission, the transmit frequency is 2287.5 MHz. The receiver frequency is 2106.4 MHz.

The spreading code for the TDRS Return Link is obtained from the transponder internal digital subsystem. Modulation mode control permits reconfiguration of the phase modulator network to deliver to the S-Band power amplifier stage one of the following:

- 1. Residual carrier, linearly phase modulated (GSTDN)
- 2. Suppressed carrier SQPSK, PN internally supplied (TDRSS)



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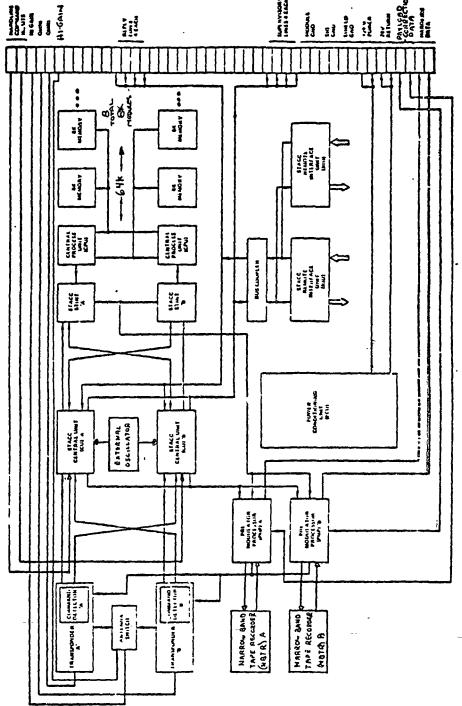


Figure 2-12 C&DH Subsystem Block Diagram

The configuration of the transmitter and the selection of modulation sources and levels for TDRSS or GSTDN operation is automatically accomplished by the transponder's digital subsystem, based on the Forward Link mode being received by the transponder and external commands. See SVS-10124, Data Format Control Book, Volume III (Command). Following modulation, the S-Band signal is amplified to the desired RF output level.

The initial power-up configuration, assumed by the transponder automatically when power is temporary interrupted to the receiver (prime power), is shown in Table 2-5.

2.3.1.1 Transmitter

The nominal RF output of the transponder is 5 watts ± 1dB at the diplexer output port. The Modulator in the TDRS transponder, Figure 2-13, has imputs for two digital telemetry data bit streams for the TDRSS Mode and two smalog telemetry inputs for the GSTDN mode.

The two TDRS data bit streams (Realtime Telemetry and High Rate Channel) are modulo-2 added to internally-generated PN codes and transmited independently on the In-phase (I) channel and the Quadrature (Q) channel as Staggered - Quadrature - Phase-Shift-Keyed (SQPSK) modulation on the S-Band Return Link. The relative distribution of modulation energy is set at 4:1 ratio (Q:X).

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Table 2-5. Power-up (RESET) RF Parameter Configuration

Parameter	Initial Value
Receiver Mode	Dual
TDRS Receive Command Rate	Low (125 bps)
Transmit:	Initially OFF
(After "Override" Turn-ON)	Auto turn on inhibited
Frequency	AUX OSC until receiver acquires: then Receiver VCO
Mode	STDN
STDN Modulation Index	Low
STDN Telemetry Channels	Both OFF
STDN Ranging Channel	Disabled

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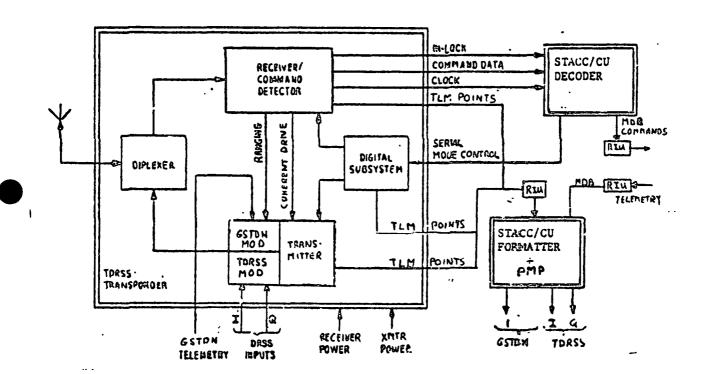


Figure 2-13. System Level Functional Interface

From the PMP, the GSTDN analog signal #1 is summed in a linear network in the transmitter and transmitted as a residual - carrier phase modulation on the S-Band Link. The transmitter GSTDN #2 signal input port is not used. The GSTDN phase modulation index is commandable LOW or HIGH. Both the TDRSS and the GSTDN telemetry channels can be turned ON/OFF by external command. The ranging turnaround function is command selectable and internal to the transponder. The GSTDN tone ranging channel is linearly summed with the telemetry inputs from the PMP. Coherent frequency turnaround ratio is 240/221.

2.3.1.2 Receiver

The receiver simultaneously tries to lock on to either the TDRS or GSTDN signal based upon received signal strength. The received signal strength of -50 to -95 dBm selects the GSTDN mode whereas the range -110 to -135 dBm causes the receiver to select the TDRS mode for processing incoming command signals. See SVS-10124, Data Format Control Book, Volume III, (Command) for commanding description and formats.

2.3.1.3 Antennas

The transponder transmits via the OMNI or the high gain antenna on the S-Band frequency of 2287.5 MHz. The transponder to antenna configuration is command selectable and set by two RF switches. The two RF switch states are independently commanded, therefore, transponder No. 1 or No. 2 can be independently configured to transmit telemetry through the OMNI or high gain antenna.

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2.3.1.4 Ranging

A turnaround of the received S-Band ranging code is command selectable and is coherent (240/221). The turn-around ranging function in the transponder is available only when the receiver is locked to a Forward Link signal. In the TDRSS mode of the transponder, turn-around ranging is obtained by synchronizing the "all l's" state in the locally generated Return Link PN code with the "all l's" state in the received Forward Link PN code. The code itself is not turned around.

The GSTDN ground Tone Ranging Subsystem relies on the Landsat-D spacecraft transponder to detect sinewave tones in the range of 4 KHz to 500 KHz which have been phase-modulated on the Forward Link carrier by the GSTDN site and to remodulate them at a predetermined phase modulation index. In the phaselock receiver, a separate intermediate frequency amplifier/phase detector channel is provided for the range tone signals. The amplitude of the output tones are maintained constant by an automatic gain control system. The modulation Index controls are provided in both the transponder and the Pre-Modulator Processor and must be configured as shown in Table 2-6, to obtain the correct modulation index for GSTDN operation.

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Table 2-6. Modulation Index Settings

Mod. Inc	dex Settings		ultant tion Index	
XPDR	PMP	RANGE(2)	BASEBAND(2)	TELEMETRY (RT)
LOW	LOW(1)	0.6	1.0	0.8
LOW	LOW	OFF	OFF	0.8
HIGH	LOW	OFF	OFF	1.6

- NOTE: (1) Baseband ON
 - (2) Mutually Exclusive Operation
 - (3) Mode B,C,D

A commandable switch is provided in the ranging channel so that it can be commanded ON/OFF. The ranging tones to the GSTDN may be transmitted alone or may be summed with the Return Link subcarrier (RT S/C telemetry) prior to applying the signals to the transmitter phase modulator. If the receiver is not locked to a forward link signal an RF switch in the transmitter automatically selects the transmitter drive frequency from a quartz crystal oscillator. This is called the "non-coherent" mode.

Some combinations of realtime spacecraft telemetry (RT), range (RNG), Range Rate (RR), On-Board Computer (OBC), Narrowband Tape Recorder (NBTR) Playback and Payload Correction Data (PCD) can be transmitted simultaneously to either GSTDN or TDRS under certain configurations of the C&DH. These are summarized in Table 2-7.

Table 2-7. TDRS/GSTDN Data Type Selection vs. Mod. Index

	GSTDN				MOD			TDRS					
	RT	RNG	RR	OBC	nbtr	PCD	INDEX	RT	RNG	RR	овс	NBTR	PCD
Α.	x		С				H	x	С	С			
в.	x	C	C				L	X	C	C			
c.	x		С	x			H	x	C	С	x		
D.	x		C		x		н	X	С	C		x	
E.	x		С			x	H	x	С	С			x

NOTES: X = Turned ON

C = Coherent Turn-around mode

L = Low Modulation Index

H - High Modulation Index

RT - Realtime Telemetry

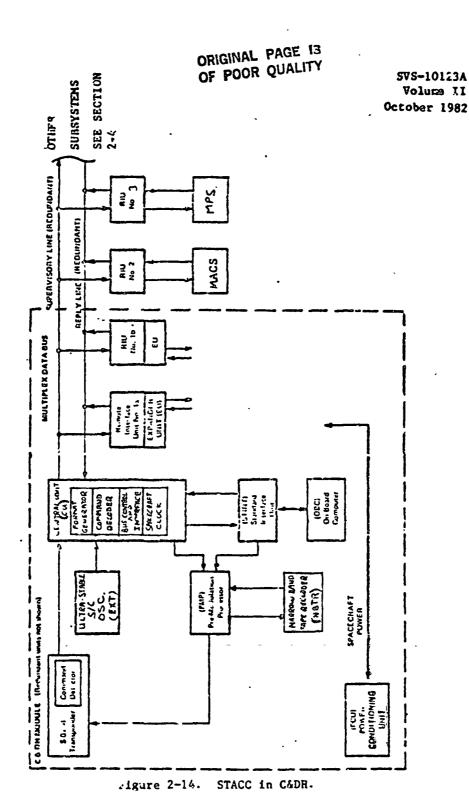
RNG- Range

RR - Range Rate

2.3.2 STACC CENTRAL UNIT (CU)

The CU includes the command decoder, format generator, bus control interface and spacecraft clock, as shown in Figure 2-14. The CU controls the telemetry matrix via the format generator. The telemetry data is retrieved from various subsystems via a Multiplex Data Bus. The CU can address up to 31 RIU's (62 redundantly). RIU address 'O' is reserved for internal CU special commands. There are nine RIU's on Landsat-D addressed as follows for the various spacecraft subsystems for both commands and telemetry:

RIU # Subsystem(s) Addressed 1 C&DH, OBC and NBTR 2 MACS 3 MPS 4 SC&CU, ESAM and PM 5 PM PDU, DPU, TM and TH GPS, MSS, TM, S-Band XMTR, and TH MSS, DPU, TM, TH and TCS 6 8 **WBCS**



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2.3.2.1 Multiplex Data Bus

The STACC CU multiplex data bus consists of the Bus Control Interface, Bus Control Units and Remote Interface Units (RIU) including Expander Unit(s). The multiplex data bus has redundant sets of "party lines". Each set contains two 2-wire circuits, one for the transmission of commands and addresses from the CU to remote units and the second for the transmission of data from the remote units back to the CU. These circuits are referred to as the Supervisory Line and the Reply Line respectively. The Multiplex Data Bus characteristics are described in Table 2-8. The 32 bit Supervisory Line Word Format is shown in Figure 2-15 and the 9 bit Reply Line Word Format is shown in Figure 2-16.

2.3.2.1.1 Supervisor Line

There are four types of supervisory line messages that are sent to the RIU's via the Multiplex Data Bus: Real-time (ground) command, RIU channel address for telemetry data, computer command, and RIU channel address for computer data. These four message segments, each containing 32 bits, comprise a 125 microsecond timing cycle on the Supervisory Line that is repeated continuously, Figure 2-17. The Supervisory Line remains active when not transmitting messages, permitting RIU's to continue deriving clock and to maintain synchronization. The Multiplex Data Bus activity is described later.

Table 2-8. Multiplex Data Bus Characteristics

Bit rate:

1.024 mbps

Bit sync:

Biphase-L per preliminary MSDADS

Word sync:

3 bits illegal code followed by Logical "l"

Word size:

32 bits on Supervisory Line

9 bits on Reply Line,

8 bits data plus leading 0

Word rate:

32 kwps maximum on Supervisory Line

16 kwps maximum on Reply Line

*Response time:

N-bit times to be specified by

contractor where N < 64.

Clock on Supervisory Line is continuous.

Data on Reply Line are phased relative to Supervisory Line Clock.

Up to 62 Remote Units may be tied on bus.

^{*} Response Time is defined as the time from the end of the message parity bit to the start of the return data sync word.

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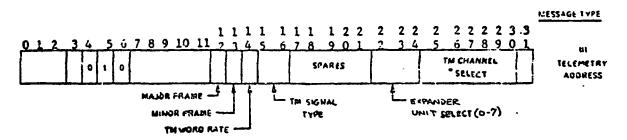


Figure 2-15. Supervisory Line Word Format

The telemetry signal type is determined by bits 15 and 16 of the telemetry message, as shown in the above diagram. The meanings of bits 15 and 16 are as follows:

- 00 Passive Analog
- 01 Active Analog
- 10 Serial digital
- 11 Bilevel

Format on the reply line consists of nine bits. The first is a sync bit, logical "O" which is followed by eight bits of telemetry information, as shown below.

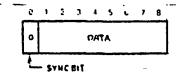


Figure 2-16. Reply Line Word Format

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Segment #0	Segment #1	Segment #2	Segment #3
o One Ground CMD message slot #0 only	o STACC Request for telemetry	o CMDs from OBC in message Slot #6 only	o OBC requests for telemetry
Row #13 only	o Inserted once every message	o Discrete CMD	o 128 requests every 16 ms.
o One ground CMD every 16 ms	slot	in message Slot	•
•	o 16 fixed words plus 112 TLM	only	
	addresses	o 16 serial magnitude CMDs	
	o 128 Telemetry requests every	every 16 ms	
	16 ms.	o 1 discrete CMD .every 16 ms.	

(See Figure 2-24)

Figure 2-17. Supervisory Line Message Format

2.3.2.1.2 Reply Line

For a given message, the addressed RIU must respond in a maximum of 31.25 microseconds following the message cycle to become active and start execution. The transmission of the acquired data is accomplished on the reply line. Signals only appear on the reply line during the response period. The reply activity message format is 9 bits long and occupies appropriate time slots containing 8 bits of data and a leading logical zero (as sync). The maximum word rate is 16 K words (9 bits) per second. The Reply line is quiescent when not in use.

2.3.2.2 Bus Control Unit

The bus controller interfaces the Central Unit to the multiplex data bus. It receives data source addressing from the format generator, adds the standard header and immediately transmits the data onto the supervisory line as Manchester encoded data. Bit 31, even parity bit, is generated on the fly as data is shifted out. The controller uses the 1.024 and 2.048 MHz clocks from the spacecraft clock for encoding. The beginning of each 32 bit data word is denoted by an approximately 1 microsecond party line pulse generated by the format generator. The controller transmits Manchester logical "ones" when real data words are not being sent.

The controller receives Manchester encoded data on the reply line. The data consists a sync bit (0) and 8 bits of data (Figure 2-16) transmitted at the

1.024 MHz rate. The controller generates an eight pulse clock from the data, a data ready envelope, and transfers the eight data bits to the format generator. The format generator returns a data received pulse during the eighth clock time to complete the data transfer.

The controller responds to four critical commands which establish the configuration of the redundant party lines. The commands determine which supervisory line is driven and which line receiver data will be accepted. See Volume III (Command) of the DFCB for description and format of Special commands.

2.3.2.3 Remote Interface Unit (RIU)

The RIU is the standard interface between the STACC CU and the subsystems. The RIU performs the command decoding and the telemetry multiplexing as shown in Figure 2-18. The RIU performs the following functions:

- Distributes eight (8) serial magnitude and sixty-three (63) pulse commands. (Refer to SVS-10124, Data Format Control Book, Volume III (Command).
- Selects and distributes clock signals from the STACC CU and forwards them to the subsystem equipment.
- 3. Selects, conditions and, where indicated, converts sixty-four (64) channels of telemetry data and relays them to the STACC CU.

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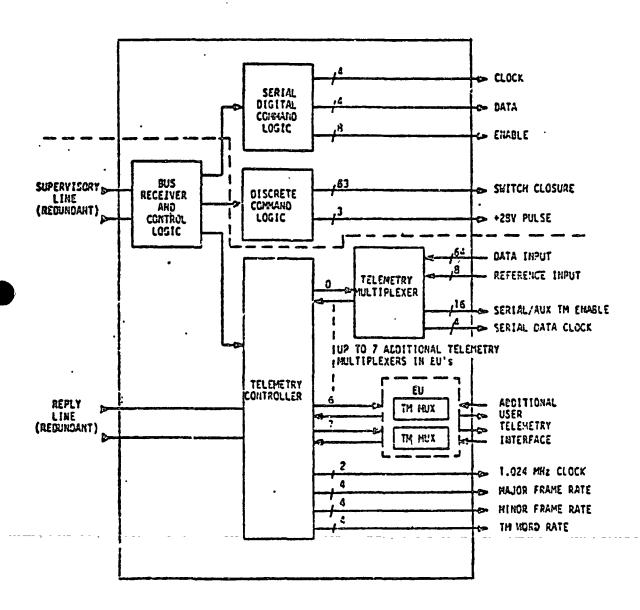


Figure 2-18. RIU Simplified Block Diagram

All RIU's on Landsat-D are connected as redundant pairs, e.g., RIU 1A and 1B. In normal operation one of the pairs is OFF and the mate of the pair is ON in the standby 2 mode. Turning one of a pair OFF can only be accomplished by turning the other on in the standby 2 mode.

2.3.2.3.1 Telemetry Controller

The Telemetry Controller is an independently timed and power strobed section used to provide all timing and control signals necessary for telemetry multiplexer and bus transmitter operation, processing of the four types of analog and digital input signals, and temporary storage of acquired data to be transmitted on both reply lines to the CU. At the end of a data acquisition process, acquired data resides in the eight bit output data register. The telemetry controller sends the contents of this register along with a one-bit sync (Figure 2-16), and the necessary power and timing signals to the reply bus transmitter which sends the 9-bit word to the CU. Nine bits of NRZ-L data including a one-bit sync are converted to biphase data and transmitted on both reply lines simultaneously.

2.3.2.3.2 Telemetry Multiplexer Expander Units

Each RIU contains a single telemetry multiplexer capable of retrieving four types of signals from a total of 64 inputs. A total of eight multiplexers may be used with any given RIU providing a maximum input capability of 512 channels. The additional telemetry multiplexers are housed in pairs in Expander Units.

2.3.2.3.3 RIU Operational Modes

The RIU "ON" is divided into 2 separate subgroups called Standby 1 and Standby 2. Table 2-9 defines the RIU operational modes.

2.3.2.3.4 Subsystem Telemetry Interface

The RIU retrieves four types of data from up to 512 input channels (fully expanded). The types of data which are acquired are analog, passive analog, bilevel and serial digital. Retrieval data is sent to the CU hence to the OBC or ground at a selected bit rate and format via the CU/PMP/Transponder. The STACC CU controls the acquisition of data, via messages sent over the Supervisory Line. The telemetry controller in the RIU selects the input to be sampled, power strobes the correct telemetry multiplexer and routes the acquired sample to the appropriate input circuit for processing, formatting and transmission to the CU over the Reply Line of the MDB. The telemetry type, bits 15 and 16 of the Telemetry message (Figure 2-15), indicates to the telemetry controller whether the input is active or passive and whether it is analog or digital. Following data acquisition and processing the telemetry controller stores the 8 bit data word prior to transmission. A 1-bit sync is added forming the 9-bit reply word which is sent over the reply lines.

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Table 2-9. RIU Operational Mode Definition

Function	Mode			
	Power			
•	<u>Fail</u>	Off	Standby 1	Standby 2
Telemetry	_	_	-	x
+5.3 Volts (Stby 2)	_	-	-	X
Frame & Word Rate Sync	-	-	-	X
1.02→ MHz Clock	-	-	-	X
Serial Command	-	_	-	X
+5.3 Volts (Stby 1)	-	-	X	X
Discrete Commands 1-63	-	-	X	X
Discrete Command 0	-	X	X	X
Supervisory Bus Rcvr.	-	X	X	X
Power Converter	-	X	X	X
Mux Pinchoff	X*	X	X	X

X - Functionally Powered

NOTES:

- 1. The difference between "OFF" and "STANDBY 1" and between "STANDBY 1" and "STANDBY 2" is determined by separate dedicated relays and will therefore remain the same after a power failure.
- 2. "STANDBY 1" is activated by command to RIU Channel "O", SELF ON.
- 3. "STANDBY 2" is activated by command to RIU Channel "63", MATE OFF.

^{* -} From external -15V source

2.3.2.3.5 Telemetry Input Quantities

Each Telemetry Multiplexer (Figure 2-18) has 64 input channels which may acquire data of four types, mentioned above. Sixteen specific channels may be used for passive analog inputs and sixteen for serial digital. Any of the 64 may be used for bilevel (preferably in groups of 8) or analog. The restrictions related to the assignment of telemetry inputs are outlined in Table 2-10.

2.3.2.3.6 Analog Telemetry Inputs

The analog signal (0 to +5.12 VDC) is converted to an 8-bit digital word. The total error of any given reading is +25 mv:

- 1. Quantitization: + 1/2 bit
- 2. Linearity: $\pm 1/2$ bit
- 3. Accuracy: + 1/4 bit
- 4. TOTAL: ± 1 1/4 bits (25 mv)

The Anglog to Digital Converter is set up so that:

0 to 10 mv = 0 counts

10 mv to 30 mv = 1 count (nominal 20 mv)

30 mv to 50 mv = 2 counts (nominal 40 mv)

5.09V to 5.11V = 255 counts (nominally 5.1V)

Table 2-10. Telemetry Channel Assignments (per Telemetry Multiplexer)

Telemetry Input Channel	CHANNEL ASSIGNMENT BY SIGNAL TYPE
0 7 8 15	Bilevel Group 0 Only these channels be used for analog data. Can be used for serial digital data Group 1 These channels may be used for analog data. An enable is available at the time of sampling.
16	Bilevel Group 2 Only these channels cana be used for conditioned passive transducer data. Bilevel Group 4 Bilevel Group 5 Bilevel Group 5 Bilevel Group 6
63	Bilevel Group 7

Therefore, 5.1V to 5.12 = all ones.

The A to D Converter input of -1V to 0V = all zeroes, 5.12V to 7V = all ones.

The analog telemetry timing characteristics for transmission over the reply lines of the multiplexer data bus are shown in Figure 2-19.

2.3.2.3.7 Passive Analog Telemetry Inputs

The passive analog signal is different from the active in that a standard 1 mA current drive is supplied. The resulting analog signal is routed to the same analog-to-digital converter, as the active analog telemetry input. The passive analog telemetry timing for data transmission over the MDB is shown in Figure 2-20.

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SUPERVISORY MESSAGE SL	.OTS		•
TELEMETRY REQUEST	0	32	64 :
1 024 MH g	anangarungan bahan barawa. 16 COUNTS	"Struger of Machines entres sanda	COMMITTED AND INFORMACIONAL AND
MULTIPLEXER ENABLE SERIAL AUXILIARY TELEMETRY ENABLE	16 COUNTS		64 COUNTS
ADC SAMPLING INTERVAL		48 COUNTS	64 CCUNTS
REPLY TRANSMISSION		84	COUNTS 73 COUNTS

Figure 2-19. Analog Telemetry Timing

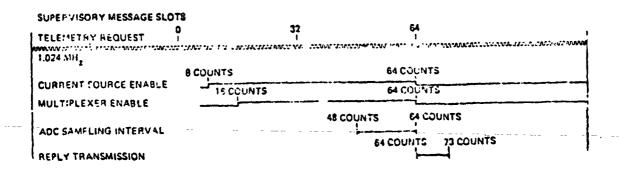


Figure 2-20. Passive Analog Telemetry Timing

2.3.2.3.8 Bilevel Telemetry Inputs

In response to the bilevel telemetry request message (via Supervisory Line), a specific block of eight telemetry inputs is routed to form a sequence to a voltage sampler which makes a "0" or "1" decision. The resultant eight bits are formated and transmitted with a one-bit sync over the reply lines just as in the analog types, Figure 2-21.

The Bilevel conversion characteristics are as follows:

- Logical "1" = +3.5 to +15 VDC
- Logical "0" = -1.0 to +1.5 VDC

2.3.2.3.9 Serial Digital Telemetry Inputs

The serial digital telemetry signal is such that the 8-bit subsystem output shift register contents are shifted to an 8-bit internal shift register for storage and a 1-bit sync is added before being transmitted over the MDB reply .line to the CU, Figure 2-22.

The serial digital input characteristics are described as follows:

8-bits 1. Word Length:

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- Logical "1" Logical "0" +2.4 to +15 VDC 2.
- -1.0 to +1.5 VDC

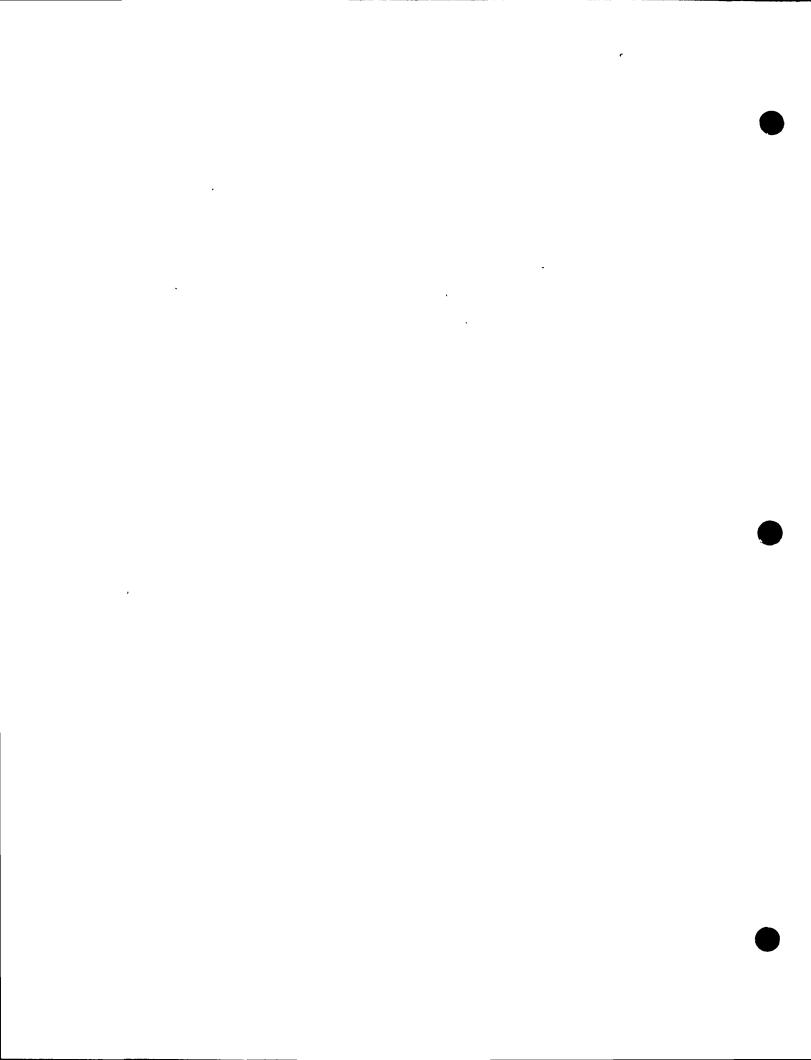
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SUPERVISORY MESSAGE SI	.OTS 0	32 64	
TELEMETRY REQUEST	nanananana	1	enagana na antana ang katalang at ang katalang Katalang at ang katalang at an
1.024 MH ₂	ายรอบพรร	64 COUNTS	
MULTIPLEXER ENABLE			
MULTIPLEXER BLANKING			
MULTIPLEXER ADDRESS		1 2 3 4 4 5 6 7 1 8 1	
BIT SAMPLING TIME	(E COUNTS	25 COUNTS	i
SERIAL/AUXILIARY	1000000	23 COCIVES	
TELEMETRY ENABLES (3)			
(BILEVEL, CHANNELS			
0-15 ONLY)			
	***************************************	5	
	-	9	
•		62 (0)	2M7S
DEDLY TO ANCHOROUS		64 COUNTS	73 COUNTS
REPLY TRANSMISSION		·	:

Figure 2-21. Bilevel Telemetry Timing

SUPERVISORY MESSAGE SLOTS TELEME PEGUEST 1 674 MF 16 COUNTS 64 COUNTS MULTIPLEXER EHABLE 16 COUNTS 64 COUNTS SERIAL AUXILIARY TELEMETRY ENABLE 8 COUNTS 34 COUNTS 64 COUNTS SERIAL DATA RETRIEVAL CLOCK ATAC MEUTER CREEK 1121314181617181 I BIT SAMPLING TIME 73 COUNTS 64 COUNTS REPLY TRANSMISSION

Figure 2-22. Serial Digital Telemetry Timing



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2.3.2.4 C&DH Clock

There is a S/C oscillator in both of the two CU's. Also an external ultrastable S/C oscillator is command selectable for CU use. Either oscillator contains the frequency source for timing the STACC and other subsystem functions — the basic oscillator frequency output is 4.096 MHz. The CU long-term oscillator stability requirement is equal to or better than 2 parts in 10⁸ per day and ±2 parts in 10⁶ per year. The external oscillator long term stability requirements over 3 years is $\leq 2 \times 10^{-7}$. The output of either oscillator is counted down to provide a 24 bit counter spacecraft clock time code with Least Significant Bit resolution of 1.024 seconds. The 24 bit counter is put into the realtime spacecraft telemetry stream and four clock signals are transferred to the RIU's for distribution. These are:

- 1. 1.024 MHz Clock signal
- 2. Major frame sync signal (every 128 minor frames)
- 3. Minor frame sync signal (every 128 telemetry minor frame words)
- 4. Telemetry word rate sync signal; Ground selectable, 125 or 1000 words per second which is equal to 1 Kbps and 8 Kbps respectively.

Within the RIU, the 1.024 MHz clock is derived from the continuous biphase signal on the multiplex data bus Supervisory Line as shown in Figure 2-23 The sync pulses have a duration of 48 clock cycles, approximately 46.9 usec, and begin 16 counts after parity verification.

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SUPERVISORY MESSAGE	SLOTS		
TELEMETRY REQUEST	0 3	5 64	!
1.024 MH _g	KARAN PARANDAKA (MPPENYARAN PARANDAKANA	WASHINGTON OF THE CONTROL OF THE CON	BEAGGARTA OF THE STANDER AND ANAMA
WORD RATE	- 16 COUNTS	64 COUNTS	
MINOR FRAMERATE	374UQD 81	64 COUNTS	
MASTER FRAME RATE	16 COUNTS	64 COUNTS	

Figure 2-23. Telemetry Sync Signals

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Telemetry word rate, minor frame rate, and major frame rate is extracted from a type III message on the Supervisory Line. The three rates are produced by decoding of logical "ls" in the three bit positions assigned to the function (Figure 2-15). The logical "ls" are generated at the word, minor frame, and major frame transition times and appear in the next type III message, (Table 2-11) following the transition. These three functions are decoded by all RIUs, independent of address. The "Telemetry Address" is placed on the supervisory line in specific slots as indicated in Figure 2-24.

The C&DH clock can actually provide the following telemetry bit rate frequencies: 1, 2, 4, 8, 16, 32 and 64 Kbps. The rate is set by a serial magnitude command sent to the STACC/CU as defined in SVS-10124, Data Format Control Book, Volume III, (Command). Landsat-D uses 1 or 8 Kbps.

Additionally, the clock generates a synchronizing interrupt to be sent to the OBC; denoted the 16 millisec interrupt, it is a 1 us pulse whose trailing edge occurs 1 us prior to the trailing edge of minor frame clock, and always at 16 ms intervals.

The 24 bit spacecraft counter (clock) clock provides three words to telemetry. The least significant eight bits of time code are connected to the fixed word multiplexer in the format generator. The other 16 bits of time code are provided as two 8 bit serial data words to remote interface unit #1 for non-fixed minor words (86 and 87) in the telemetry matrix.

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2.3.2.5 Format Generator

The format generator (Figure 2-14) provides all necessary timing and control to address data sources and format real-time data into a fixed telemetry format.

2.3.2.5.1 Timing Slots

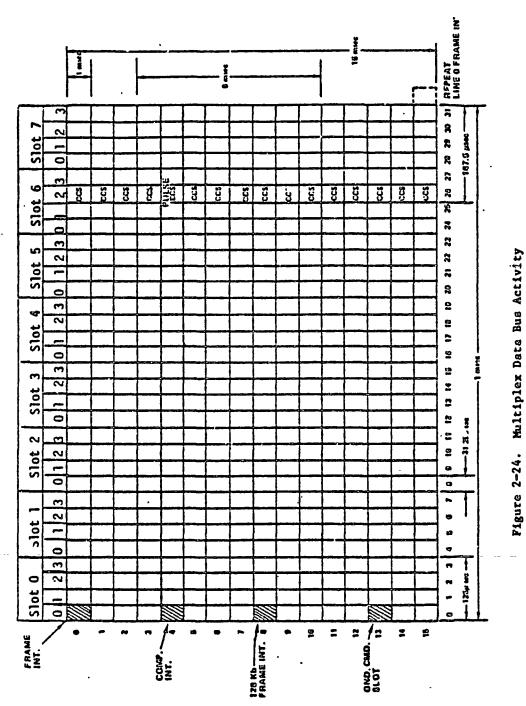
The format generator establishes the timing segments which regulate the transmission of data on the supervisory line. Each of the continuous timing segments is 31.25 us in duration. Specific segments are assigned for telemetry addresses, computer addresses, ground commands, and computer commands. With the exception of those assigned to telemetry addresses, segments remain fixed regardless of the telemetry output rate. Telemetry segments slide appropriately to maintain the telemetry output rate.

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Table 2-11. Summary of Format Definitions

Bit	Bit	
Position	Quantity	Function
0-2	3 MESSAGE	1 - 1/2 bits (+), 1 - 1/2 bits (-)
3	1 HEADER	Fixed logical "1"
4-6	3	Specifies 1 of 3 message types:
	(000)	MESSAGE TYPE I (SER. MAG. CMD)
7-11	5	Specifies one of 32 Remote Units
12-14	3	Specifies one of eight command lines
		to user
15-30	16	Specifies magnitude command value
31	1	Parf.ty
	(001)	MESSAGE TYPE II (PULSE CMD)
7-11	5	Specifies one of 32 remote units
12	1	Specifies remote unit A or B
13-24	12	Not Used
25~30	6	Selects one of 64 outputs
31	1	Parity
	(010)	MESSAGE TYPE III (TM ADDRESS)
7-11	5	Specifies one of 32 remote units
12	1	Major frame rate
13	1	Minor frame rate
14	1	TM word rate
15-16	2	Specifies one of four signal types
17-21	5	Not used
22-24	3	Allows expansion to 256 inputs
25-30	6	Selects one of 64 inputs
31	1	Even parity





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2.3.2.5.2 Ground Command Slot

The ground command slot is the first full slot which occurs 8 ms after the OBC 16 ms interrupt (which is generated by the spacecraft clock). See SVS-10124, Data Format Control Book, Volume III, (Command).

2.3.2.5.3 Telemetry Format

The format generator provides a fixed telemetry format using 8 bit words assembled into a 128 word by 128 frame major frame. The unit establishes 4 fixed groups of 4 words each in positions 0-3, 32-35, 64-67, and 96-99. Words 32-33, 35 and 96-99 are reserved for subcom channels. Words 0-3, 34 and 64-67 are obtained from a fixed word multiplexer in the format generator and inserted in the telemetry frame during all modes of operation. The bit assignments of the fixed words are as specified earlier.

2.3.2.5.4 Modes of Operation

The format generator provides data source addressing sequences dependent upon the mode of operation. There are four possible modes. Each ROM memory (2) in the format generator is capable of storing two unique sets of minor frame data source addresses. The format generator processes one set during ROM mode 1, and the second set during ROM mode 2. During the computer mode, data source addressing is provided by the on-board computer: the format generator sends a telemetry address and a 1.024 MHz gated clock to the computer which responds with 16 bits of serial address data. The format generator stores and formats

the data and transmits it serially through the party line controller onto the supervisory line during the next telemetry address slot. Non-telemetry data source addressing by the computer is handled in the same manner using a computer address and 1.024 MHz gated clock from the unit, and 16 bits of address data from the computer. This address is transmitted on the supervisory line during the computer address slot.

A fourth mode of operation is the dwell mode. Dwell mode, like the above 3 modes, may be selected by a serial magnitude command from RIU #1 and will control the data source addressing. During word periods other than 0-3, 32-35, 64-67, and 96 through 99 the format generator generates the address programmed into the ROM memory location corresponding to the dwell word identified. See SVS-10124, Data Format Control Book, Volume III, (Command) for dwell command description and format.

2.3.2.5.5 Reply Data

Data is returned on the Reply Line in the specified response time of 64 to 73 microseconds. The format generator receives 8 bits of data and derived clock from the party line controller. It loads telemetry data into a telemetry buffer and a computer register. Computer requested data is loaded into the computer register only. The buffer is loaded into the telemetry output register for transmission in bi-phase at the current telemetry rate. The computer register contents are transferred serially to the computer using the 1.024 MHz clock and either telemetry data or computer data.

2.3.2.5.6 Dwell Telemetry

The format generator provides word 67, dwell ID (minor frame word number), to telemetry. In response to the dwell command the format generator transfers an 8 bit serial word, with dwell indicator and ID to the PMP.

2.3.3 ON-BOARD COMPUTER (OBC)

The OBC is a general purpose computer, the NASA Standard Space Computer (NSSC-1), and is included as part of the C&DH Subsystem. The OBC communicates with satellite subsystems via the STINT to the STACC CU and hence the Multiplex Data Bus. The general characteristics of the OBC are listed in Table 2-12. Interface with the computer is provided to accommodate a number of functions. Those underlined below are covered in this volume and the remainder in SVS-10124, Data Format Control Book, Volume III, (Command):

- 1. Delayed Computer Storage
- 2. Program Loading
- 3. Command Output
- 4. Telemetry data input (Telemetry Addresses)
- 5. Telemetry format control (Flexible Format)
- 6. Data output to real-time telemetry (Computer Words)
- 7. Data Dump direct to the PMP (Memory Dump)
- 8. Direct access to any data point via Multiplex Data Bus (Computer Data)

Table 2-12. On-Board Computer Characteristics

Word length: 18 bits, 5 bits instruction ID, 1-bit index, 12 bits

operand fetch.

Execution speed: 2 us cycle time, 4 us add, 32 us multiply, and 60 us

divide.

Memory capacity: Eight 8192 word modules for total of 65,536 words. (8

modules contain two 4 K banks each.)

Processor interrupts: 16 levels of priority interrupt.

Direct memory access: 16-cycle steal channels, maximum I/O rate of 100 K

words/second.

Memory write protection: Allowable storage areas are assigned in segments of

128 words.

Input/output: I/O is achieved through time multiplexing of existing

telemetry and command hardware.

Program load and dump: Any 4 K memory bank can be loaded and dumped via

command and telemetry without software bootstrap

Power: 45-watts maximum (computing with full memory

complement).

Instructions: 55

Accumulator: One - 36 bits

Index register: One

Direct addressing: All 4 K words in any bank.

1, 17

2.3.3.1 Telemetry Data Input

Telemetry data is provided to the OBC as a result of the OBC supplying a Computer or Telemetry Address via the STACC Interface Unit (STINT), Pigure 2-17. The format generator acquires the telemetry data and non-telemetry data (if needed) and makes it available to the OBC via the STINT.

2.3.3.1.1 Addresses

The format generator provides control signals for the serial transfer of 16-bit data acquisition addresses from the OBC for both flexible format telemetry and computer data. In the flexible format mode, there are two limitations of OBC controlled format: the OBC does not supply telemetry address transfer signals for words - 0 through 3 and 64 through 67; and all data items which OBC processors have been getting from main telemetry (not subcom) must be included in main telemetry in the new format, unless execution of processors can be discontinued. See Reference 3 in Section 5, "MMS Flight Executive User's Guide."

2.3.3.1.2 Return data

The format generator provides control signals for the serial transfer of all telemetry data and all computer data to the OBC via the STINT. The data transfer of telemetry data is independent of the computer data transfer. Each data type is eight bits sent to the CU (format generator) hence to the STINT and OBC. Both telemetry and computer data are transferred over the same circuitry.

2.3.3.2 Telemetry Format Control

The OBC supplies the addresses via the STINT for data acquisition in the OBC flexible telemetry format mode. The OBC sends a block of addresses to the CU for data acquisition during the flexible telemetry format mode.

2.3.3.3 Data Output to RT Telemetry (Computer Words)

Certain types of required data are not available directly from the subsystem RIU's via the MDB (e.g., FS attitude errors). These data are derived within the OBC and accessed via "Computer word" through the RIU as serial telemetry words. Twenty-five columns have been assigned for this type of data. The format of the OBC reports is described in Section 2.5.

2.3.3.4 OBC Memory Dump

An OBC memory dump is initiated by either hardware or software commands through the STINT. Hardware dumps are accomplished in command selectable 4096 memory word banks. Sixteen banks are used on Landsat D. Dump rate is command selectable at 1 Kbps or 32 Kbps. The dump rate is selected by a special command to the CU.

2.3.3.4.1 Hardware Controlled Dump

The NSSC contains a hardware controlled channel that allows any bank to be dumped independently of processor operation. The memory bank (4096 words) to be dumped is selected by command. Only that selected fixed bank of NSSC memory is

dumped, and the dump is repeated four times. The format of the dump was described earlier in Section 2.2.5. A hardware memory dump requires clearing the computer before the dump and reinitializing the system afterwards. The reason for this is that only the fixed bank can be dumped under hardware control. See Data Format Control Book, SVS-10124, Volume III (Command) for command details.

2.3.3.4.2 Software Controlled Dump

An executive request command to initiate a software controlled dump is accomplished by ground command. The Executive Request Command is decoded in the STINT and the low order 18 bits of the command word (27 bits) are made available to the NSSC. Two commands are required: The first command includes the number of words to be dumped and the second command includes the starting absolute address of the dump. The length should be limited to 4096 and start address and length limited as not to cross a bank boundary (i.e.; bank boundary = 4096, a dump of 150 words starting at 3996 would not be permitted because the bank boundary is exceeded). The minimum dump is 1024 words. Dumps of less than 8 words will be increased to 8 words and repeated until a total of 1024 words are Dumps of less than 256 words are repeated until total dump is 1024 dumped. words. Dumps of greater than or equal to 256 words will be repeated 4 times. Software Dumps are useful for getting reports from the OBC which are too lengthy to be included in telemetry. The Dump is controlled by the STINT in the same way as a hardware dump, and over the same output lines and using the same format as the hardware dump. A software dump is repeated four times as in a hardware dump.

2.3.4 STACC INTERFACE UNIT (STINT)

The STINT is the interface unit for the OBC and the STACC CU. The STINT interfaces with the PMP during the OBC Memory Dump period at 1 or 32 Kbps telemetry rate. The STINT interfaces with the C&DH RIU for discrete and serial magnitude commands as well as STINT status for telemetry. Whenever bits are designated by number convention as to most significant bit (MSB) and least significant bit (LSB), the MSB is transmitted first between the STINT - Central Unit and between the STINT-Remote Interface Unit.

When a word is to be transferred from the STINT to the memory, the STINT receives an acknowledgement of the transfer request from the NSSC and uses it to gate the word onto the memory input bus (MIB). When a word is to be transferred from memory to the STINT, the NSSC acknowledgement signal is used to gate the word from the memory output bus (MOB) into a register located in the STINT. The STINT function and number of data bits transferred are shown in Table 2-13.

2.3.4.1 Input and Output

I/O operations between the STINT and OBC are carried out through 16 direct memory access (DMA) devices. All 16 DMA devices share a single channel. Simultaneous requests for memory access are resolved by hardware priorities. I/O can be performed one word at a time under program control or by means of cyclesteal operations independent of OBC instruction processing. The DMA devices are listed in Table 2-13. Where word sizes are less than 18 bits, the operation reads from or stores into the least significant bits of the computer word. No

packing or unpacking takes place. In storing, unused bits are set to l's. To avoid halting program execution when multiple DMA requests occur, 1 CPU memory cycle is allowed between 10 cycle DMA accesses. Program execution is not likely to be slowed even briefly by more than 40 percent, and the average over a period of a second will rarely exceed 20 percent.

Device O reads telemetry data into memory simultaneously with its transmission to ground control. Device I reads in spacecraft data specially requested by the OBC. Device 2 is used when the OBC has been given control of telemetry format. It sends out the addresses for data which must be obtained and included in the telemetry stream. Device 3 has a similar function, except that data obtained will come back through device 1 and will not be included in telemetry.

Devices 4 and 5 bring in 27-bit commands transmitted from ground control. The 9 most significant bits come in through device 4 and the 18 least significant on device 5. Similiarly, devices 6 and 7 send commands from the OBC to other parts of the spacecraft via the Standard Computer Interface (STINT) and Central Unit.

Device 8 allows the computer to receive 16-bit serial magnitude commands through an RIU in the same was as any other piece of spacecraft hardware. Since the 16 bits could be derived from a 27-bit command sent out from the OBC the OBC can sand commands to itself.

Device 10 is used to set and reset bits in the Activation Status Register (ASR). The ASR is used in starting cycle-steel I/O operations. See Reference Item 14 in Section 5. Device 11 is used to place data into the telemetry stream from the OBC memory (OBC Contribution to Telemetry).

Table 2-13. DMA Device Assignment

Device Number	Function	Word Size (Bits)
0	TELEMETRY DATA IN	8
1	COMPUTER DATA IN	8
2	TELEMETRY ADDRESS OUT	16
3	COMPUTER ADDRESS OUT	16
4	COMMAND INPUT	9
5	(GROUND) COMMAND INPUT	18
6	COMPUTER COMMAND OUT	9
7	(OBC) COMPUTER COMMAND OUT	18
8	INPUT FROM REMOTE DECODER (RIU)	16
9		
10	ASR CONTROL	18
11	OUTPUT TO REMOTE MUX (RIU)	8
12	****	
13	an directivate	
14	WIDEBAND DUMP OUT	32
15	(OBC DUMP) STINT CONTROL	18

Devices i4 and 15 are used in connection with software dumps. The dump is started by sending device 15 a word with a 1 in bit 18 and ended by sending it a word with a 0 in bit 18. The dump is sent through device 14 as a normal cyclesteal operation. Cycle-steal operations allow a block of data to be sent out or read in while program execution continues. Each memory access (to read or store one I/O word) takes 10 machine cycles (5 memory cycles), during which memory references by the OBC are locked out.

2.3.5 PRE-MODULATOR PROCESSOR (PMP)

The PMP receives 1 Kbps or 8 Kbps telemetry data, NRZ-L, and required clock from the STACC CU and 1 Kbps or 32 Kbps OBC Memory Dump data, NRZ-L, and clock from the STINT. It also receives NBTR playback data from the NBTR and Payload Correction data from the PCD Formatter. The data rate and content of output are command selectable. PMP output data is NRZ-M for TDRSS and Biphase-S for the Ground Stations. Additionally, the PMP provides hardline telemetry data direct to the umbilical.

The PMP is redundant and each one can be powered and providing data for either the TDRS or GSTDN telemetry streams simultaneously.

2.3.6 NARROWBAND TAPE RECORDER (NBTR)

The Landsat-D spacecraft has two identical tape recorders which can either record or playback data, but not both simultaneously. Each recorder has 238 minutes of recording capacity. Playback time is 14.9 or 7.45 minutes depending

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upon tape speed and assuming a full tape. A tape winding capability in the forward or reverse direction at high speed exists without erasure of previously recorded data. In this mode, the tape can be moved end-to-end in 3.1 minutes. A summary of tape modes is given in Table 2-14. The NBTRs are dedicated units and are not cross-strapped to the PMPs. NBTR 1 is dedicated to PMP A and NBTR 2 dedicated to PMP B.

Table 2-14. Recorder Operating Modes

Operating Mode	Data Rate (Kbps)	Level of MUX	Tape Speed (1ps)	Min. Total Oper. Time (Minutes)
Record	8	2	0.42	238
Playback (TDRS)	128	2	6.7	14.9
Playback (GSTDN)	256	2	13.4	7.45
Winding		•	33	3.1

The Landsat-D recorder is a slightly modified version of the 4.5×10^8 Bit Standard Tape Recorder (see Figure 2-25). Digital data recording is accomplished by demultiplexing the input data onto 2 channels that are recorded in parallel and 4 times redundantly on the magnetic tape. Upon playback, one of the 4 pairs of redundant signal channels, selected by serial magnitude command, is deskewed and dejittered and finally combined into a single output.

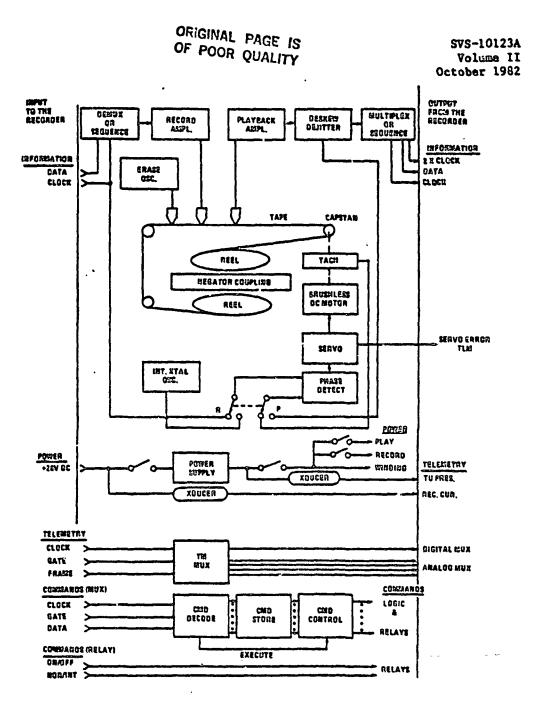


Figure 2-25. Narrowband Tape Recorder Simplified Block Diagram

During recording, the tape speed is controlled by the externally supplied data input clock. During playback, the timing reference is derived from a crystal oscillator located within the recorder. Tape motion is achieved by using a brushless dc motor whose speed is controlled by a tachometer sensor. During recording this sensor compares motor speed with the external data timing reference. During playback, the tachometer sensor is replaced by the off-tape playback signal which is compared to the internal crystal oscillator.

The recorder is provided with a multiplexed (binary logic) command system. As such, it does not have any memory during periods when the recorder is turned off. Thus, a full set of commands is generally required to establish the desired recorder operating mode. The commands are stored while the recorder is in the standby mode.

The commanded operating mode, the actual operating mode, and various other vital recorder functions and conditions are monitored via the telemetry system. The majority of these signals are made available to the spacecraft in multiplexed format, their timing being controlled by externally generated signals. Temperature, pressure, and total recorder current are available in a non-multiplexed format.

One ground-isolating power supply generates the internally required voltages.

The command and control circuitry is operative whenever the recorder is in the Power On mode. The majority of the telemetry circuitry is powered whenever the recorder is in the Power On mode; however, the recorder current TM is on at all

the time that the +28 Volt S/C bus is powered. The erase circuitry is powered whenever the recorder is in a Power On mode; the control of the erase function is controlled by a logic level. Circuitry required for tape winding, recording, or playback is powered selectively.

2.4 TELEMETRY MATRIX ASSIGNMENTS

A summary of the telemetry data to be formatted on the Landsat D spacecraft is presented in Figure 2-26, which contains the following information for each user:

- 1. Number of minor frame words (columns) required for the mission and engineering formats.
- 2. Number of telemetry words appearing in each of the six columns dedicated to subcommutation.

2.4.1 TELEMETRY FRAME FORMAT

Table 2-15 presents the minor frame word (column) allocations for the Mission format and Table 2-16 presents the allocations for the Engineering format. Each minor frame word is sampled every 128 milliseconds at 8 Kbps and every 1.024 seconds at 1 Kbps.

In both formats, sixteen minor frame words (columns 0, 1, 2, 3, 32, 33, 34, 35, 64, 65, 66, 67, 96, 97, 98, 99) are reserved for specific spacecraft data and are designated as fixed words. Note that Tables 2-15 and 2-16 both contain the fixed words as indicated in Figure 2-3.

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Six of the fixed words have been allocated for subcommutated data such that data are sampled at least once every major frame. Words may be sampled in these columns (32, 33, 96, 97, 98, 99) more than once per major frame. Tables 2-17 through 2-22 list the telemetry word assignments in each of the subcomms.

A telemetry word assigned a sample rate of once per major frame will be sampled approximately once every lo seconds at 8 Kbps and approximately once every 2 minutes at 1 Kbps.

Those words which require sampling faster than once per major frame have been equally spaced in subcomm columns. As an example, a word requiring 4 samples per major frame is sampled first in minor frame N, second in minor frame N+32, third in N+64, fourth in N+96, in the same column.

or Fr	eme		Subc	commutate	d Words		
(colu	ms)		(sampl	es per m	ajor fram	±)	
n	Eng'g Format	Col. 32	Col. 33	Col. 96	Col. 97	Col. 98	Co1 99
	17	-	-	19	21	23	1
	6	-	_	-	-	-	-
	41	-	-	58	56	47	1
	7	-	-	22	19	21	-
	0	-	-	11	6	7	-
	10	3	1	8	16	19	-
	0	-	-	8	8	9	81
	0	105	-	-	-	-	16
	0	-	41	1	1	1	1
	0	-	9	-	-	-	_
	0	9	-		-	-	-
		-	9	1	1	1	1
	6	-	12	-	-	-	4
	0	9	32	-	-		-
	26	-	-	-	-	-	-
	0	-	1	-	-	-	3
	10	-	4	-	-	-	8
	127	126	109	1 28	128	128	116
·	127	2	109	128		0	
		Eng g Format 17 6 41 7 0 10 0 0 4 6 0 26 0 10	Eng'g Col. Format 32 17 - 6 - 41 - 7 - 10 3 0 - 10 105 0 - 0 9 4 - 6 - 0 9 26 - 0 - 10 - 10 -	Eng'g Col. Col. Format 32 33 17	Eng'g Col. Col. Col. Format 32 33 96 17 19 6 41 10 3 1 8 0 11 10 3 1 8 0 - 8 0 105 8 0 105 9 1 6 - 12 - 0 0 9 32 - 26 0 - 1 1 - 10 10 - 4 - 1 10 - 4 - 1	Eng'g Col. Col. Col. Col. Format 32 33 96 97 17 19 21 6	Eng'g Col. Col. Col. Col. Col. Format 32 33 96 97 98 17 19 21 23 6

Figure 2-26. Landsat D Telemetry Summary

2.4.2 TELEMETRY ASSIGNMENTS BY USER

Tables 2-23 through 2-41 list telemetry points by user. The user identification numbers have been arbitrarily assigned to facilitate cross referencing to the telemetry matrix assignments (Tables 2-15 through 2-22).

Each listing gives a User ID, telemetry function description, type of signal, telemetry matrix locatiou, sample rate, mode and RIU channel assignment as explained in Table 2-23. Explanations of bit atructure of digital words are also included in each listing.

RIU channels are numbered 0 through 63. Where an expander unit is associated with a RIU, the EU channels 0 through 63 are identified as RIU channels 64 through 127. Thus a designation of 01-80 indicates channel 16 of the EU associated with RIU 01 (C/CH). If a second expander unit is associated with a RIU, channels 0 through 63 of that EU are identified as RIU channels 128 through 191. RIU channel designations for bilevel digital words in the listings refer to the first (MSB) of the eight bits in a RIU group. Thus a bilevel word with a designation of 06-32 indicates a bilevel word in RIU 06 where bit 0 is assigned to channel 32, bit 1 to channel 33, 2 to 34, 3 to 35, etc.

Tables 2-15 thru 2-41 represent drawing number 47J249440AR up to alteration notice 12. To keep updated use alteration notices from print control.

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Minor			Kinor		
Prane			Prese		
Word	User 10	Description	Word	01 =-9n	Description
		a market and design to the contract of the con			
8	С/ри-01	MINGE FEARE SYNC WORD OO	ä	C/DR-56	SUBCOM OI (SER TABLE 2-17)
10	10-KC/2	MINOR PHAME SYNC WORD OI	37	C/DH-57	SUBCOM 02 (SER TABLE 2-18)
05	C/DIF-C1	MINOR PRAME SYING WORD 02	4 2	C/DH-16	BILETEL HORD 010 (RCVR STATUS)
63	C/DH-08	TLA BATE, PORMAT, ID	33	080-01	OBC CATA IDENTIFIER
90	PM -61	REM A ATT CHTAL THRUSTERS ON/UPP	9:	P74-42	AEM C ATT CHTAL THRUSTERS ON/OFF
0	PH-63	BEM B ATT CHTRL THRUSTERS OR/OFF	37	PH-44	REM D ATT CHTRL THS"STERS ON/OFF
90		_	38	ESAM-09	ESA-1 SIGNAL STATUS
6	MPS-40	TOTAL LOAD CURRENT	39	MPS-40	TOTAL LOAD CI'RRENT
80	ESAM-01	ESA-1 PTICH PINE ERROR	40	ESAM-02	ESA-1 PITCH COARSE ERBOR
8	ESAM-05	ESA-2 PITCH PINE ERROR	7	ESAri-1 5	ESA-2 PITCH COARSE ERROR
9	CPS-02	BILEVEL WORD 701	42		
==	NBTR-01	RECORCER 1 DIGITAL MUX	43		
12	NBTR-02	RECORDER 2 DIGITAL MUX	99	TH-50	CALIBRATION LAND 1 CURRENT
2			45	12-71	CALIBRATION LANT 2 CURRENT
14	MPS-49	BATTERY 3 HIGH CURRENT	46	TH-52	CALIBRATION LAMP 3 CURRENT
15	MPS-30	BATTERY 2 HIGH CURRENT	47	TR-59	BLACKBOOT TEMPERATURE
91	MPS-29	BATTERY 1 RICH CURRENT	87	174-60	SI PPA TEMPERATURE
11	GPS-01	CPS DATA WORD	64	174-61	CALIBRATION SHUTTER TEMPERATURE
18	CPS-01	CPS DATA HORD	ድ	TH-62	BACKUP SEUTTER TEMPERATURE
61	GP3-01	GPS DATA WORD	21	TH-70	COLD STACE FPA TEMPERATURE
20	CPS-01	GPS DATA HORE	52	174-94	SIC TEMPERATURE
17	GPS-01	CPS DATA WORD	53	TM-69	BAPPLE TEHPERATURE
22	CPS-01	CPS DATA WOLD	24		
23	CPS-01	CPS DATA WORD	55		
24	CPS-01	GPS DATA WORD	56		
22	GPS-01	CPS JATA WORD	23		
5 6	CPS-01	CPS DATA WORD	82		
2.7	CPS-01	CPS DATA WORD	R	NPS-35	Lestriments los chraekt
28	GPS-01	CPS DATA WORD	.09	MPS-36	INSTRUMENTS HICH CURRENT
53		-	19	MPS-38	c/du current
3			62	HPS-39	SC/CU, 1795 CURRENT
31		_	63	MPS-37	MACS, PM CURRENT

Table 2-15. Mission Telemetry Frame Format

ORIGINAL PAGE IS OF POOR QUALITY

C/DH-O4 SPACECRAFT CLOCK (8 LSB) C/DH-O5 MINOR PRAME COUNTER C/DH-O6 COMPAND COUNTER, SELECTED CU C/NH-O7 DWELL WOBE D. CHANNEL PH-43 REA A ATT CHTRL THRUSTERS ON/OFF HPS-40 TOTAL LOAD CURRENT ESAM-O3 ESA-1 ROLL FINE ERROR ESAM-O3 ESA-2 ROLL FINE ERROR CPS-O2 BILEVEL WORD 701 TM-111 SERIAL WORD 603 HBTR-O5 BILEVEL WORD 701 TM-111 SERIAL WORD 603 HBTR-O5 RECORDER 1 ANALOG MIX NO. 2 HBTR-O9 RECORDER 1 ANALOG MIX NO. 2 HBTR-O9 RECORDER 2 ANALOG MIX NO. 2 HBTR-O9 RECORDER 2 TOTAL CURRENT HBTR-O9 RECORDER 1 TOTAL CURRENT HBTR-O9 RECORDER 2 TOTAL CURRENT HBTR-O9 RECORDER 1 ANALOG MIX NO. 1 C/DH-O3 SPACECRAFT CLOCK (8 HSB) HBTR-O9 SPACECRAFT CLOCK (8 HSB) HBTR-O9 OBC DATA WORD 1 OBC-O2 OBC DATA WORD 2 OBC DATA WORD 3 OBC-O2 OBC DATA WORD 3 OBC-O2 OBC DATA WORD 3 OBC-O2 OBC DATA WORD 5 OBC-O2 OBC DATA WORD 5	Minor		_	Minor		
C/DH-O4 SPACECRAFT CLOCK (8 LSB) 96 C/DH-58 C/DH-05 HINDR PRAIRE CREATED CU C/HH-05 DWELL MODE ID, CHANNEL PH-41 RDA ATT CHTILL THRUSTERS ON/OFF 100 FW-42 PH-43 RDA ATT CHTILL THRUSTERS ON/OFF 101 FW-42 PH-43 RDA ATT CHTILL THRUSTERS ON/OFF 100 FW-42 PH-43 RDA ATT CHTILL THRUSTERS ON/OFF 101 FW-42 PH-43 RDA ATT CHTILL THRUSTERS ON/OFF 100 FW-42 PH-43 RDA ATT CHTILL THRUSTERS ON/OFF 100 FW-42 PH-43 RDA ATT CHTILL THRUSTERS ON/OFF 100 FW-42 ESAM-O7 ESA-1 ROLL FINE ERROR 103 RDA-06 ESAM-O7 ESA-2 ROLL FINE ERROR 105 ESAM-O8 ESAM-O7 ESA-2 ROLL FINE ERROR 105 ESAM-O8 ESAM-O7 ESA-DRA CHTILL FORD ATT ON THE CONTROL ON THRE-O5 RECORDER 1 ANALOG WIX NO. 2 110 OBC-O2 NBTR-O5 RECORDER 1 ANALOG WIX NO. 2 111 OBC-O2 NBTR-O5 RECORDER 1 ANALOG WIX NO. 1 115 OBC-O2 C/DH-O2 SPACECRAFT CLOCK (8 HIDDLE BITS) 119 OBC-O2 C/DH-O3 SPACECRAFT CLOCK (8 HIDDLE BITS) 119 OBC-O2 OBC-O2 OBC DATA WORD 1 ERROR 123 OBC-O2 OBC-O2 OBC DATA WORD 2 123 OBC-O2 OBC-O2 OBC DATA WORD 2 123 OBC-O2 OBC-O2 OBC DATA WORD 2 123 OBC-O2 OBC-O2 OBC DATA WORD 3 127 OBC-O2 OBC-O3 OBC-O2 OBC DATA WORD 3 127 OBC-O2 OBC-O3 OBC-	Prane Word	User 1D	Deact!ption	Prame Word	User 10	Description
C/DH-04 SPACERART CLOCK (8 L5B) 96 C/DH-59 C/DH-05 WHORE PARK COUNTER, SELECTED CU 98 C/DH-199 C/DH-06 COMMUND COUNTER, SELECTED CU 98 C/DH-61 C/DH-07 DHZLL MODE ID, CHAINEL BOARD CURRENT CATAL LAND TRAIL THRUSTERS ON/OFF 100 FW-42 FW-43 RDM B ATT CHTILL THRUSTERS ON/OFF 101 FW-44 102 ESA-1 ROLL FINE ERROR 103 WES-40 ESAM-07 ESA-2 ROLL FINE ERROR 105 ESAM-06 ESAM-07 ESAM-07 ESA-2 ROLL FINE ERROR 105 ESAM-08 ESAM-07 ESAM-07 ESAM-07 ESAM-07 ESAM-07 ESAM-08 ESAM-07 ESAM-07 ESAM-08 ESAM-07 ESAM-08 ESAM-07 ESAM-07 ESAM-08 ESAM-07 ESAM-07 ESAM-08 ESAM-07 ESAM-08 ESAM-						
C/DH-05 NHOR FAME COUNTER C/DH-06 COMMAND COUNTER; SELECTED CU C/DH-06 COMMAND COUNTER; SELECTED CU C/NH-07 DFLL MORE ID, CHAMREL PH-41 REA ATT CHTEL THRUSTERS OR/OFF 100 FW-42 PH-43 REA ATT CHTEL THRUSTERS OR/OFF 101 FW-42 PH-45 REA ATT CHTEL THRUSTERS OR/OFF 102 FW-44 HFS-40 TOTAL LADA CURRENT 103 FWS-40 ESAM-07 ESA-1 ROLL FINE ERROR 103 FWS-40 CFS-02 BILEVEL HORD 701 TM-111 SERIAL HORD K 105 70U-04 BILEVEL HORD 603 TM-111 SERIAL HORD K 106 TM-111 SERIAL HORD K 106 70D-04 BILEVEL WALLOF WIX NO. 2 110 106 CFS-02 BILEVEL WALLOF WIX NO. 2 111 106 CFS-02 BILEVEL TOTAL CURRENT 1113 OBC-02 NBTR-05 RECORDER 1 TOTAL CURRENT 1115 OBC-02 NBTR-05 RECORDER 2 TOTAL CURRENT 1115 OBC-02 NBTR-05 RECORDER 2 TOTAL CURRENT 1115 OBC-02 NBTR-05 SPACECRAPT LOCK (8 HSB) 119 OBC-02 C/DH-02 SPACECRAPT LOCK (8 HSB) 120 OBC-02 C/DH-02 SPACECRAPT LOCK (8 HSB) 121 OBC-02 C/DH-03 SPACECRAPT LOCK (8 HSB) 121 OBC-02 OBC-04 OBC DATA WORD 1 ROUD 3 122 OBC-02 OBC-05 OBC DATA WORD 1 LOCK 121 OBC-02 OBC-05 OBC DATA WORD 2 122 OBC-02 OBC-06 OBC DATA WORD 3 127 OBC-02 OBC-07 OBC DATA WORD 3 127 OBC-02 OBC-07 OBC DATA WORD 4 127 OBC-02 OBC-07 OBC DATA WORD 5 127 OBC-02 OBC DATA WORD 6 1 127 OBC-02 OBC DATA WORD 7 1 127 OBC-02 OBC DATA WORD 7 1 127 OBC-02 OBC DATA WORD 9 1 127 OBC-02 OBC DATA WORD 1 127 OBC-02 OBC DATA WORD 1 127 OBC-02 OBC DATA WORD 1 127 OBC-03 OBC-04 OBC-05 OBC DATA WORD 1 127 OBC-02 OBC DATA WORD 1 127 OBC-03 OBC DATA	4	C/DH-04	SPACEURAPT CLOCK (8 LSB)	96	C/DH-58	_
C/DH-06 COMMAND COUNTER, SELECTED CU C/DH-07 DRELL MODE ID, CHANNEL PH-41 REM A ATT CHTEL THRUSTERS OR/OFF 100 FW-42 PH-43 REM B ATT CHTEL THRUSTERS OR/OFF 101 FW-44 REM B ATT CHTEL THRUSTERS OR/OFF 102 EBJAR-1C EBJAR-03 ESA-1 ROLL FINE ERROR 103 KES-40 ESA-2 ROLL FINE ERROR 103 KES-40 ESA-2 ROLL FINE ERROR 105 KES-40 ESA-4-04 ESA-4-04 ESA-4-07 ESA-2 ROLL FINE ERROR 105 KES-4-04 ESA-4-07 ESA-2 ROLL FINE ERROR 105 KES-4-04 ESA-4-07 ESA-2 ROLL FINE ERROR 105 KES-4-04 ESA-4-07 ESCORDER 1 ANALOG WIX NO. 2 111 008C-02 NBTR-05 RECORDER 1 ANALOG WIX NO. 1 115 08C-02 C/DH-07 SPACECRAFT CLOCK (8 MIDDLE BITS) 119 08C-02 C/DH-07 SPACECRAFT CLOCK (8 MIDDLE BITS) 110 08C-02 C/DH-07 SPACECRAFT CLOCK (8 MIDDLE BITS) 110 08C-02 C/DH-07 OBC-02 OBC DATA WORD 2 123 08C-02 OBC-02 OBC DATA WORD 3 120 08C-02 OBC-02 OBC DATA WORD 3 127 08C-02 OBC-03 08C-04 08C-05 08C DATA WORD 3 127 08C-02 OBC-05 08C DATA WORD 3 127 08	5	C/Dil-05	MINOR PRAME COUNTER	97	65-Ra/2	-
C/N+-07 DRELL MODE ID, CHANNEL 99 C/DH-61 PH-41 REM A ATT CHTEL THRUSTERS ON/OFF 100 FH-42 PH-41 REM A ATT CHTEL THRUSTERS ON/OFF 100 FH-42 PH-43 REM A ATT CHTEL THRUSTERS ON/OFF 101 FR-44 HPS-40 TOTAL LOAD CURRENT 103 FRS-40 ESAH-07 ESA-2 ROLL FIRE ERROR 104 ESAH-04 ESAH-07 ESA-2 ROLL FIRE ERROR 104 ESAH-04 CFS-02 BILEVEL HORD 603 105 ESAH-04 CFS-02 BILEVEL HORD 603 110 OBC-02 TH-111 SERIAL HORD 603 110 OBC-02 NBTR-05 RECORDER 1 ANALOG HOX NO. 2 111 OBC-02 NBTR-06 RECORDER 1 ANALOG HOX NO. 2 111 OBC-02 NBTR-07 RECORDER 1 ANALOG HOX NO. 1 113 OBC-02 C/DH-03 SPACECRAPT CLOCK (8 HSB) 113 OBC-02 C/DH-03 SPACECRAPT CLOCK (8 HSB) 112 OBC-02 OBC-02 OBC DATA HORD 2 120	يو	C/DH-06	COMMAND COUNTER, SELECTED CU	86	C/DH-60	
PH-41 REM A ATT CHTL THRUSTERS ON/OFF 100 PH-42 PH-43 REM A ATT CHTL THRUSTERS ON/OFF 101 PH-44 PF-40 TOTAL LOAD CHRENT 103 103 104 ESAH-03 ESA-1 ROLL FINE ERROR 104 ESAH-04 ESAH-07 ESA-2 ROLL FINE ERROR 105 ESAH-04 ESAH-07 ESA-2 ROLL FINE ERROR 106 ESAH-04 ESAH-07 ESA-2 ROLL FINE ERROR 106 ESAH-04 CFS-02 BILEVEL WORD 603 106 DGC-02 TH-111 SERIAL WORD 603 110 DGC-02 NBTR-04 BILEVEL WORD 603 110 DGC-02 NBTR-05 RECORDER I ANALOG MUX NO. 2 111 DGC-02 NBTR-06 RECORDER I ANALOG MUX NO. 1 115 DGC-02 NBTR-07 RECORDER I ANALOG MUX NO. 1 115 DGC-02 C/DH-03 SPACECRAFT CLOCK (8 MSB) 119 DGC-02 NBTR-04 RECORDER I SERVO ERROR 123 DGC-02 OBC-02 OBC DATA WORD 2 124	_	C/nH-07	DAELL MODE ID, CHANNEL	66	C/DR-61	SUBCOM C6 (SER TABLE 2-22)
PH-43 RDH B ATT CHIRL THRUSTERS ON/OFF 101 EBAN-16 HPS-40 TOTAL LOAD CURRENT 103 ESAN-16 ESAH-07 ESA-1 ROLL FINE ERROR 104 ESAH-04 ESAH-07 ESA-1 ROLL FINE ERROR 105 ESAH-04 ESAH-07 ESA-2 ESA-1 ROLL FINE ERROR 105 ESAH-04 ESAH-07 ESA-1 ROLL FINE ERROR 105 TH-111 SERIAL HORD 603 100 BC-02 PHTR-05 RECORDER 1 ANALOC MUX NO. 2 111 00E-02 HRTR-05 RECORDER 1 TOTAL CURRENT 1113 0EC-02 HRTR-07 RECORDER 1 TOTAL CURRENT 1115 0EC-02 RBTR-04 SPACECRAPT CLOCK (8 HIDDLE BITS) 119 0EC-02 C/DH-05 OBC DATA WORD 1 123 0EC-02 OBC-02 OBC DATA WORD 2 123 0EC-02 OBC-02 OBC DATA WORD 4 125 0EC-02 OBC-02 OBC DATA WORD 5 127 0EC-02 OBC-02 OBC DATA WORD 4 127 0EC-02 OBC-03 OBC DATA WORD 5 127 0EC-02 OBC-04 OBC-05 OBC DATA WORD 5 127 0EC-02 OBC-05 OBC DATA WORD 6 0EC-05 0	60	PH-41	28.5	100	PM-42	REM C ATT CHTRL THRUSTERS ON/SFP
102 E3Ab-1C	ق و	PH-43	B ATT CHTRL THRUSTERS	101	PH-44	REM D ATT CHTRL THRUSTERS ON/OFF
PAGE	0			102	BSAN-1C	ESA-2 SIGNAL STATUS
ESAH-07 ESA-1 ROLL FINE ERROR 104 ESAH-04 ESA-1 GPS-02 ESAH-07 ESA-2 ESAH-07 ESA-2 ESAH-07 ESA-2 ESAH-07 ESA-2 ESAH-08 ESAH-08 ESAH-07 ESAH-08 ESAH-08 ESAH-07 ESAH-08	-	MPS-40	TOTAL LOAD CURRENT	103	MPS-40	
CAN-07 ESA-2 EGIL FINE ERROR 105 ESAM-08 EJA-2	7	ES AM-03	ESA-1 ROLL FINE ERNOR	104	RSAM-04	
CPS-02 BILEVEL HORD 701 106 CPS-02 CPS-02 CPS-02 CPS-02 CPS-02 CPS-02 CPS-03 CPS-04 CPS-05 CPS	m	ESAM-07	ESA-2 ROLL FINE ERROR	105	ESAK-08	
TP-111 SERIAL HORD R 109 08C-02 08C DATA HORD 109 08C-02 08C DATA HORD 109 08C-02 08C DATA HORD 110 08C-02 08C DATA HORD 111 08C-02 08C DATA HORD 112 08C-02 08C DATA HORD 113 08C-02 08C DATA HORD 114 08C-02 08C DATA HORD 115 08C-02 08C DATA HORD 116 08C-02 08C DATA HORD 117 08C-02 08C DATA HORD 118 08C-02 08C DATA HORD 119 08C-02 08C DATA HORD 110 08C-02 08C DATA HORD 111 08C-02 08C DATA HORD 112 08C-02 08C DATA HORD 113 08C-02 08C DATA HORD 114 08C-02 08C DATA HORD 115 08C-02 08C DATA HORD 116 08C-02 08C DATA HORD 117 08C-02 08C DATA HORD 118 08C-02 08C DATA HORD 119 08C-02 08C DATA HORD 110 08C-02 08C DATA HORD 111 08C-02 08C DATA HORD 112 08C-02 08C DATA HORD 113 08C-02 08C DATA HORD 114 08C-02 08C DATA HORD 115 08C-02 08C DATA HORD 116 08C-02 08C DATA HORD 117 08C-02 08C DATA HORD 118 08C-02 08C DATA HORD 119 08C-02 08C DATA HORD 119 08C-02 08C DATA HORD 110 08C-02 08C DATA HORD 111 08C-02 08C DATA HORD 112 08C-02 08C DATA HORD 113 08C-02 08C DATA HORD 114 08C-02 08C DATA HORD 115 08C-02 08C DATA HORD 117 08C-02 08C DATA HORD 118 08C-02 08C DATA HORD 119 08C-02 08C DATA HO	•	GPS-02	BILEVEL HORD 701	901		
108 056-02 050 DATA WORD 109 056-02 050 DATA WORD 109 056-02 050 DATA WORD 1109 056-02 050 DATA WORD 110 056-02 050 DATA WORD 111 056-02 050 DATA WORD 112 056-02 050 DATA WORD 113 056-02 050 DATA WORD 114 056-02 050 DATA WORD 115 056-02 050 DATA WORD 117 056-02 050 DATA WORD 056-02 056	~	111-11	SERIAL HORD K	107		
109 086-02 080 DATA WORD	9			108	0BC-02	DATA
PULTACION PULT	7			601	0BC-02	DATA
HETR-05 RECORDER 1 ANALOG MUX NO. 2 111 065-02 08C DATA WORD	6	20N-04	BILEVE! WORD 603	110	OBC-02	DATA
NBTR-06 RECORDER 2 ANALOG MUX NO. 2 112 06C-07 08C DATA WORD NBTR-09 RECORDER 1 TOTAL CURRENT 113 08C-02 08C DATA WORD NBTR-10 RECORDER 1 TOTAL CURRENT 114 08C-02 08C DATA WORD NBTR-03 RECORDER 1 ANALOG MUX NO. 1 115 08C-02 08C DATA WORD NBTR-04 RECORDER 2 ANALOG MUX NO. 1 116 08C-02 08C DATA WORD C/DH-03 SPACECRAPT CLOCK (8 MSB) 119 08C-02 08C DATA WORD C/DH-03 SPACECRAPT CLOCK (8 MSB) 119 08C-02 08C DATA WORD C/DH-03 SPACECRAPT CLOCK (8 MSB) 119 08C-02 08C DATA WORD NBTR-04 RECORDER 1 SERVO ERROR 120 08C-02 08C DATA WORD ORC-02 08C DATA WORD ORC-03 08C DATA	•	NBTR- 05		111	OBC-02	DATA
HBTR-09 RECORDER 1 TOTAL CURRENT 113 095-02 08C DATA HOLD	_	NBTR-06	RDER 2 ANALOG MUX NO.	112	000-05	DATA WORD
NETR-10 RECORDER 2 TOTAL CURRENT 114 06C-02 06C DATA HORD	_	NBTR-09	RDEK 1	113	0BC-02	DATA HORD
NBTR-03 RECORDER 1 ANALOG MUX NO. 1 115 05C-02 07C DATA WDBD	~	NBTR-10	RECORDER 2 TOTAL CURRENT	116	OBC02	DATA
NBTR-03 RECORDER 1 ANALOG MUX NO. 1 116 05G-02 05G DATA MUBD NBTR-04 RECORDER 2 ANALOG MUX NO. 1 117 05G-02 05G DATA WUBD C/DH-03 SPACECRAPT 3.00CK (8 M3B) 118 05G-02 05G DATA WUBD C/DH-02 SPACECRAPT CLOCK (8 M3B) 119 05G-02 05G DATA WUBD C/DH-02 SPACECRAPT CLOCK (8 M3B) 120 05G-02 05G DATA WUBD NBTR-03 RECORDER 1 SERVO ERROR 121 05G-02 05G DATA WUBD NBTR-03 05G-02 05G DATA WUBD NBC-02 05G DAT	_		_	115	OBC-02	DATA WORD
NBTR-04 RECORDER 2 AHALCG MUX NO. 1 117 08C-02 08C DATA WORD C/DH-03 SPACECRAFT 3LOCK (8 MIDDLE BITS) 118 09C-02 08C DATA WORD C/DH-02 SPACECRAFT 3LOCK (8 MIDDLE BITS) 119 08C-02 08C DATA WORD NBTR-03 RECORDER 1 SERVO ERROR 121 08C-02 08C DATA WORD NBTR-03 RECORDER 2 SERVO ERROR 121 08C-02 08C DATA WORD NBTR-03 08C-02 08C DATA WORD NBTR-03 08C-02 08C DATA WORD NBC-02 08C DATA WORD NBC-03 08C-02 08C DATA WORD NBC-03 08C-03 08C-03 08C DATA WORD NBC-03 08C-03 08C-03 08C-03 08C DATA WORD NBC-03 08C-03 08C-0		HBTR-03	RECORDER 1 ANALOG MUX NO. 1	116	0BC-02	DATA MORD
C/DH-O3 SPACECRAFT CLOCK (8 MIDDLE BITS) 118 05C-02 09C DATA WORD C/DH-O2 SPACECRAFT CLOCK (8 MSB) 119 09C-02 09C DATA WORD NOT CLOCK (8 MSB) 119 09C-02 09C DATA WORD NOT CLOCK (8 MSB) 110 09C-02 09C DATA WORD NOT CLOCK (8 MSB) 110 09C-02 09C DATA WORD NOT CLOCK (8 MSB) 110 09C-02 09C DATA WORD NOT CLOCK (9 MSCA) 110 09C-02 09C	ıv.	NBTR-04		117	0BC-02	DATA KORD
C/DH-O2 SPACECRAFT CLOCK (8 MSB) 119 0BC-O2 0BC DATA WORD NRTR-O7 RECORDER 1 SERVO ERROR 121 0BC-O2 0BC DATA WORD NRTR-O3 RECORDER 2 SERVO ERROR 121 0BC-O2 0BC DATA WORD NRTR-O3 0BC DATA WORD 1 12 0BC-O2 0BC DATA WORD 0BC-O2 0BC DATA WORD 1 123 0BC-O2 0BC DATA WORD 0BC-O2 0BC DATA WORD 1 124 0BC-O2 0BC DATA WORD 0BC-O2 0BC DATA WORD 1 125 0BC-O2 0BC DATA WORD 0BC-	۰	C/DH-03		118	03005	DATA WORD
120 08G-02 0BC DATA WORD NBTR-07 RECORDER 1 SERVO ERROR 121 08G-02 0BC DATA WORD 08G-02 0BC DATA WORD 08G-02 0BC DATA WORD 1 123 0BC-02 0BC DATA WORD 08G-02 0BC DATA WORD 2 124 0BC-02 0BC DATA WORD 08G-02 0BC DATA WORD 3 125 0BC-02 0BC DATA WORD 08G-02 0BC DATA WORD 4 126 0BC-02 0BC DATA WORD 08G-02 0BC DATA WORD 5 127 0BG-02 0BC DATA WORD 08G-02 0BC DATA WORD 08G-02 0BC DATA WORD 127 0BG-02 0BC DATA WORD 128 0BG-02 0BC DATA WORD 129 0BG-02 0BC DATA WORD 120 0BG-02 0BC DATA WORD 120 0BG-02 0BC DATA WORD 121 0BG-02 0BC DATA WORD 122 0BG-02 0BC DATA WORD 123 0BG-02 0BC DATA WORD 124 0BG-03 0BC DATA WORD 125 0BG-03 0BC DATA WORD 126 0BG-03 0BC DATA WORD 127 0BG-03 0BC DATA WORD 128 0BG-03 0BC DATA WORD 129 0BG-03 0BC DATA WORD 120 0BG-03 0	7	C/DH-02	SPACECRAPT CLOCK (8 MSB)	119	OBC-02	DATA HORD
NBTR-07 RECORDER 1 SERVO ERROR 121 056-02 05C DATA WORD NBTR-08 RECORDER 2 SERVO ERROR 122 056-02 06C DATS, WORD 056-02 05C DATS, WORD 056-02 05C DATA WORD 1 123 056-02 05C DATA WORD 056-02 05C DATA WORD 1 124 056-02 05C DATA WORD 056-02 05C DATA WORD 1 125 056-02 05C DATA WORD 056-02 05C DATA WORD 1 125 056-02 05C DATA WORD 056-02 05C DATA WO	60			120	OBC-02	DATA KORD
NBTR-08 RECONDER 2 SERVO ERROR 1122 OBC-02 OBC DATA WORD OBC-02 OBC DATA WORD OBC-02 OBC DATA WORD OBC-02 OBC DATA WORD A OBC-02 OBC DATA WORD A WORD 3 124 OBC-02 OBC DATA WORD OBC-02 OBC DATA WORD A WORD 3 125 OBC-02 OBC DATA WORD OBC-02 OBC DATA WORD A	•	NBTR-07	RECORDER 1 SERVO ERROR	121	080-02	DATA WORD
08C-02 08C DATA WORD 1 123 08C-02 09C DATA W.ED 08C-02 08C DATA WORD 1 124 08C-02 08C DATA WORD 08C-02 08C DATA WORD 3 125 08C-02 08C DATA WORD 08C-02 08C DATA WORD 4 126 08C-02 08C DATA WORD 08C-02 08C DATA WORD 4 127 08C-02 08C DATA WORD 08C-02 08C DATA WORD 08C-02 08C DATA WORD DATA WORD 08C-02 08C DATA WORD DATA WORD 08C-02 08C DATA WORD DA	0	NBTR-08	DRDER 2 SERVO	122	0BC-02	DATA WORD
08C-02 08C DATA MORD 2 124 08C-02 08C DATA WORD 08C-02 08C DATA WORD 08C-02 08C DATA WORD 125 08C-02 08C DATA WORD 08C-02 08C DATA WORD 4 126 08C-02 08C DATA WORD 08C-02 08C DAT		0BC-02	DATA	123	0BC-02	DATA K.RD
08C-02 0BC DATA WORD 3 125 0BC-02 0BC DATA KORD 0BC-02 0BC DATA WORD 4 126 0BC-02 0BC DATA WORD 0BC-02 0BC DATA WORD 5 127 0BC-02 0BC DATA WORD 0BC-02 0BC-02 0BC DATA WORD 0BC-02 0BC-0	7	0BC-02	DATA	124	OBC-02	DATA WORD
08C-02 08C DATA WORD 4 126 08C-02 08C DATA WORD 9 08C-02 08C DATA WORD 9 127 08C-02 08C DATA WORD 127 08C-02 08C DATA WORD	9	OBC-02	DATA	125	000-02	DATA KORD
08C-02	4	0BC-02	DATA	126	0BC-02	DATA HORD
	s	0BC-02	DATA 40%D	127	0BC-02	DATA WORD
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Table 2-15. Mission Telemetry Frame Format

Table 2-16. Engineering Telemetry Frame Format

ORIGINAL PAGE IS OF POOR QUALITY

Description	TOTAL LOAD CURRENT	ESA-1 ROLL COARSE ERROR	ņ				DATA	DATA	DATA WORD	DATA	DATA	DATA	DATA WOED			DATA MOOD	DATA MORD	DATA WORD	MORD	STORE STORE	DATA WORD	DATA WORD	DATA WORD	ORC DATA KORD 25				
User ID	MPS-40	ESAM-04	ESAM-08	MACS-100	MACS-101	OBC-02	OEC-02	OBC-02	OBC-02	0BC-02	0BC-02	03C-02	0BC-02	020-02	70-290	20-080 09-080	73-030 0-0-030	090-02	OBC-02	0BC-02	05C-02	0BC-02	OBC-07	0EC-02				
Minor Prese Hord	103	104	105	106	101	108	109	110	11	112	113	114	115	911	/17	110	120	121	122	123	124	125	126	127				
Description			ESA-2 ROLL FINE ERROR	ACS B IRU ROLL POSITION	ACE A IRU ROLL POSITION	_	IRU ROLL RATE 1	BILEVEL WORD 603	IRU PITCH RATE 1	IRU PITCH RATE 2	INU YAW RATE 1	IRU YAW RATE 2	SOLAR ARRAY POSITION NO. 1	RECORDER 1 ANALOG MUX NO. 1	RECORDER 2 ANALOG MUX NO. 1	SPACECARFI CLOCA (8 RIDDLE BLIS)	SOLAR ADDAY DOCT TO NO 2	RECORDER 1 SERVO ERROR	RECORDER 2 SERVO ERROR		DATA	DATA	OBC DATA HORD 4	OBC DATA WORD 5	 			
User ID	MP5-40	ESAM-03	ESAM-07	MACS-99	MACS-96		MACS-62	PDU-04	MACS-63	MACS-66	MACS-64	MACS-67	PDU-11	NBTR-03	NBTK-04	C/04-03	C/ UN-04	NBTR-07	NBTR-08	OBC-02	0BC-02	OBC-02	080-02	OBC-02				
Minor Frame Word	71	72	73	74	75	76	11	78	79	80	81	82	83	984	ŝ	90	, a	68	8	16	92	93	94	95				

Table 2-16. Engineering Telemetry Frame Format

ORICINAL PAGE IS OF POOR QUALITY

DPU-01 TIME CODE KDED 1	32 124-09	POLY I HISP
TIME CODE NORD	33 134-10	
DPU-01 TIME CODE	-	BARD 2 +199
DPU-01	35 75-12	BAND 2 -199
DPU-01 TIME CODE		BABD 3 +199
DPU-01 TIME CODE		BAHD 3 -19W
DPU-01 TIME CODE	38 124-15	BARD 4 +199
DPU-02 DPU STATUS		BAND 4 -19V
TH-44 SIC		
TM-45 SLC 2 DRIVE CURRENT	41 TM-18	EAND 5/7 -19V
TM-46 SLC 1	42 TR-19	BAND 6 +19V
TH-48 SLC	43 TH-20	DAND 6 -199
11K-50	64 TH-21	180 +19V
TM-47 SLC 1	45 TM-22	150 -19U
TH-49	46 TH-31	MIX INPUT CURRENT
TH-03	47 TH-32	MUX BIT DEBSITT
\$0-KL	48 TM-30	HJJX +309
TH-08 ALL	49 TR-33	
TH-07 +28		
13 -05 105		
TM-101	52 TN-35	har -3v
TH-102		MUK - SV
TH-103	54 Tri-37	15V - 15V
TR-104	55 774-24	ASS 1
TH-105	\$6 TH-25	P/S 1 SHA +279
TM-106 SERIAL	57 TN-26	-
TM-107 SERIAL	58 TH-27	
Tra-108	59 TX-28	P/S 2 SMA +27V
TM-109	60 TN-29	P/S 2 SHA -179
174-110	61 TM-38	EARD 1 A/D REF
-	62 TH-39	BAND 2 A/D REF
177	10-12-	TH ATTACH FITTING NO. 1 TION

Table 2-17. Subcommutator 1 - Minor Frame Word 32

ORIGINAL PAGE IS OF POOR QUALITY

Franc Number	Vser ID	Description	Frese Number	User ID	Description
4	PH-45	PH-1A REATERS 1-4, STATUS	96	TM-76	MUX ELECTROHICS TEMP
~	TM-40	BAND 3 A/D REF	26	17-77	MIX PUR SUPPLY TEMP
۰	TH-41	BAND 4 A/D REF	98	TH-79	PRI MIRROR TEMP
_	TH-02	TH ATTACH PITTING NO. 2 TEMP	66	14-80	PRI MIRROR MASK TEMP
68	TM-42	BAILD S A/D REF	201	Te-81	SEC MIRROR TEMP
_	TH-53	BLACKBODY CURRENT .	101	Trt-82	SEC HIRROR MASK TEMP
_	TM-43	BAND 7 A/D REF	102	TH-83	AMBIENT PREAMP TEMP (EVEN)
	TH-56	INCHAORM 1 POSITION	103	TH-84	TELESCOPE HOUSING TEMP
	TH-57	INCHWORD 2 POSITION	104	TM-85	TELESCOPE BASEPLATE TEMP
_	TH-58	INCHWORM 3 POSITION	105	TH-87	SHA +Z HOUSING TIMP
	TH-59	BLACKBODY TEMP	106	T-68	SHA -Z HOUSING TRMP
	09-KL	SI PPA TEMP	107	TH-55	COLD STACE REATER CURRENT
٠,	DPU-03	DPU TEMP A	801	TN-90	SWA ELECTROMICS TEMP
_	PM-46	PH-1A LATCH VALVE STATUS WORD	109	TM-91	SHA FLRX PIVOT +X TEMP
_	TM-61	CAL SHUTTER TEMP (ACTIVE)	110	TH-92	SHA FLEX PIVOT -X TEMP
_	TH-86	CAL SHUTTER TEMP (PASSIVE)	111	TM-89	SCALL ANGLE PONITOR TEHP
_	TM-62	BACKUP SHUTTER TEHP	112	TN-94	SLC TEMP
	TH-63	COLD STAGE TEMP A (COLD)	113	14-93	SUNSHIELD TEMP
•	TM-64	COLD STACE TEMP B (HOT)	114	TH-95	CAL LAMP FILTERS TEMP
_	TH-65	INTER STACE TEMP A (COLD)	115	TH-96	COOLER AMBIENT STACE TEMP
	TM-66	INTER STACE TEMP B (ROT)	116	12-97	COOLER DOOR TEMP
۰,	PH-51	PH-IA LATCH VALVE STATUS	111	TH-54	BAFFLE HEATER CURRENT
			118	TH-67	CPPA CONTROL TEMP
_	TM-69	BAPPLE TEMP	119	1H-100	+Y RADIATOR PIN TEMP
_	TM-68	CPPA HEATER CURRENT	120	TH-03	TH ATTACH FITTING NO. 3 TEMP
_	TH-70	COLD STAGE PPA TEMP	121	TH-04	TH ATTACH PITTING NO. 4 TEMP
_	TH-71	AMBIENT PREAMP TEMP (000)	122	TH-05	APEX FITTING NO. 1 TEMP
	TH-72	COLD PREAMP TEMP	123	TH-06	APEX PITTING NO. 2 TEMP
	TH-73	RELAY OPTICS TEMP	124	TB-07	APEX FITTING NO. 3 TEMP
_	TH-74	POWER SUPPLY TEMP	125	TH-08	PDU MTG PNL (INSOARD) TEMP
	TH-75	BAND 6 POST AMP TEMP	126	TH-37	BOOM JETTISON PYRO BRACKET TRAP
	TM-78	CAL LAMP DRIVE TEMP	127		

Tabla 2-17. Subcommutator 1 - Minor Frama Word 32

ORIGINAL PAGE IS OF POOR QUALITY

Minor Franc Kunber	User ID	Description	Manor Presso Manbor	User ID	Description
8	PH-47	PM-1A TANK PRESSURE	32	HSS-61	+159 TBLEASTRY REG
10	MSS-63	SHUTTER CONTROL INTEGRATOR	33	HSS-32	-24.59 PRIMARY POSER SUPPLY 1
02	MSS-64	SCAN MIRROR DRIVE	34	MSS-33	-24.5V PRIMARY POWER SUPPLY 2
03	MS 3-65	SCAN HIRROR REGULATOR	35	MSS-34	+5V RADICHETER PUR SUPPLY
30			36	MSS-62	CAL LAMP CURRENT
0.5	MSS-31	AVBRACE DATA DENSITY	37	MSS-59	OPT SWITCH LAMP I-1
90	MSS-05	SCAN HIRROR BEG TEMP	38	MSS-60	OPT SHITCH LAND 1-2
07	MSS-06	SCAN MIRBOR BLECTRONICS TEMP	39	MSS-36	BAND 1 CHANNEL A VIDEO
80	MSS-07	SCAN MIRROR COIL TEMP	40		
60	MSS-08	SCAN MIRROR HOUSING TEMP	61		
01	MSS-09	MULTIPLEXER TEMP	42		
11	MSS-10	RADIOMETER PUR SUPPLY TEMP	43		
12	MSS-11	RADIOMETER ELECTRONICS COVER TEMP	44	BSAM-13	ESA-1 TEMP
	MSS-12	PRIMARY PUR SUPPLY 1 TEMP	45	MSS-41	BAND 2 CHAMMEL A VIDEO
	HSS-13	PRIMARY PWR SUPPLY 2 TEMP	46	ESAH-14	BSA-2 TEMP
2	MSS-14		47	BSAM-15	ESA-1 BOLOMETER TEMP
	MSS-15	PIBER OPTICS TEMP 2	48	ESAM-16	ESA-2 BOLCMETER TEMP
17	MSS-16	HV MONITOR BAND IA	69		
18	MSS-17	HV HONITOR BAND 18	S		
61 .	MSS-18	HV MONITOR BAND 2A	15	MSS-47	BAND 3 CHANNEL A VIDEO
20	MSS-19	HV MONITOR BAND 2B	25		
21	MSS-20	HV HOITTIOR BAHD 3A	53		
22	MSS-21	HV MONITOR BARD 38	\$		•
23	MSS-22	BAND 1 + 15V REG	55		
24	MSS-23	BAND 2 + 15V REC	99		
52	MSS-24	BAND 3 + 15V REC	25	MSS-53	BAND 4 CHARREL A VIDSO
92	MSS-25	BAND 4 + 15V REC	58		
27	M3S-26	+12/-6v REG	29		
28	MSS-28	RADIOMETER +19V	9		
53	MSS-27	RADIONETER +19V	19		
30	MSS-29	MUX +5V LOCIC MONITOR	62		
3	MSS-30	MUX A/D REPERENCE	63	PDU-09	+5v Power Supply
		-			

Table 2-18. Subcommutator 2 - Minor Press Word 33

ORIGINAL PAGE IS OF POOR QUALITY

Minor Pranc Number	Vaer 1D	Description	Minor France Number	Voer ID	Description
64	CPS-11	R/PA P/S +5V (STANDBY)	96	TH-12	RP COMBINER MTG PRL (OUTBOARD) TEMP
65	CPS-12	R/PA P/S +12V (STANDSY)	97	TH-13	EQUIP HTG PANEL NO. 1 TEMP (+T)
99	GPS-13	R/PA P/S +5V	98	TH-14	EQUIP HTG PAHEL NO. 2 TEMP (+Y)
29	CPS-14	R/PA P/S +12V (ANALOC)	66	TH-15	3
89	CPS-15	R/PA P/S INPUT CUARENT	001	TH-16	EQUIP HIG PANEL NO. 4 TEMP (-T)
69	CPS-16	R/PA P/S TEMP	101	TH-17	Ś
20	CPS-17	R/PA ANALOG KODULE TEMP	102	TB-18	6 TEMP (
71	GPS-08	DSC OVEN VOLTAGE	103	TB-19	S-EAND INTE PAREL TEMP NO. 1
72	GPS-07	OSC OVEN TEMP	104	TH-21	-Y BULKHEAD (STATION 55) TEMP
73	CPS-09	EXT OSC REG VOLT	105	TH-23	CLOSING WEB, WB MOD NO. 1 TEMP
7.	GPS-10	EXT OSC CASE TEMP	106	77-24	CLOSING HEB, WB MOD NO. 2 TEMP
75	GPS-18	EXT PREAMP TEMP	107	TH-25	MSS MOUNT TEMP
92	DASB-01	BILEVEL HORD 707	108	TH-26	CLOSING WEB, MSS SENSOR TEMP NO. 1
77	DASB-02	XMTR A PUR SUPPLY NON	109	TH-27	CLOSING HEB, MSS SENSOR TIMP NO. 2
78	DASB-03	XMTR B PUR SUPPLY KON	110	TE-29	UPPER BOOM PONER BINGE TEMP
79	DASB-04	XMTR A PUR AMP TEMP	111	TH-31	UPPER HINGE CABLE TEMP
80	DASB-05	INTR B PUR ANP IEMP	112	TH-32	GPS PREAMPLIFIER TEMP
18	DASB-08	IMTR A REPLECTED RP PUR	113	TB-33	+Y KEEL STRUCTURE TEMP
82	DAS8-09	THIS B REPLECTED RP PUR	114	TH-34	-Y KEEL STRUCTURE TEHP
83	DASB-06	XMTR A PORHARD BF PWR	115	TH-35	BOOM LATCHDONN BITTING TEMP NO. 1
4	DASB-07	XMTR B FORWARD RP PWR	116	TH-28	LOWER BOOM POMER BINGS TEMP
8	PDU-02	BILZVEL WORD 601	117	TH-30	UPPER BOOM TEMP
96	PDU-03	BILEVEL WROL 602	118	TH-38	ARRAY TEMP HO. 1
87			119	TH-39	ARRAY TENP NO. 2
88		BILEVEL KURD 604	120	TH-40	ARRAY TEMP NO. 3
89		PDU POWER SUPPLY TEMP	121	TH-41	ARRAY TEMP NO. 4
80	PDU-07	PDU LOCIC TEMP	122	TH-20	S-BAND INTR PANEL TEMP NO. 2
16		ADS TONP	123	TB-36	BOOM LATCHDOWN PITTING TEMP NO. 2
92		19V	124	TH-22	SAD HOUNTING PANEL TEMP
93		PDU MIG PRL (TOP OUTBOARD) TEMP	125	PDU-11	SOLAR ARRAY POSITION NO. 1
7 6		RIU 6 MTG PHL (INBOARD) TEMP	126	PDU-12	SOLAR ARRAY POSITION NO. 2
95		RIU 6 HTG PNL (OUTBOARD) TEMP	127		:

Table 2-18. Subcommutator 2 - Minor Frame Word 33

ORIGINAL PAGE IS OF POOR QUALITY

Mach	Minor Pricae Rumber	User 1D	Description	Minor Franc Bunber	User ID	Description
WB-01 CDE PRI SERIAL OUTPUT (WORD 1) WB-01 WAGG-01 FSS 12-BT DATA (WBS) 34 W4GG-79 WAGG-01 FSS 12-BT DATA (WBS) 35 WAGG-79 WAGG-04 FAVLOAD BEATERS 1 AND 2 STATUS WB-02 WAGG-04 ACK A I 6-BIT COMP STATUS (WBS) 37 WAGG-73 WAGG-05 RULL MAG TOOR BRIVEA A 39 WAGG-73 WAGG-05 RULL MAG TOOR BRIVEA A 39 WAGG-75 WAGG-07 ACK A TAM PILL COMPENSATED SIG 41 WAGG-65 WAGG-07 ACK A TAM PILL COMPENSATED SIG 41 WAGG-65 WAGG-07 ACK A TAM PILL COMPENSATED SIG 41 WAGG-65 WAGG-07 ACK A TAM PILL BOAT (WDD 1) 44 WAGG-65 WAGG-07 ACK A TAM PILL COMPENSATED SIG 41 WAGG-65 WAGG-07 ACK A TAM PILL COMPENSATED SIG 41 WAGG-65 WAGG-07 ACK A TAM PILL BOAT (WDD 1) 44 WAGG-65 WAGG-07 ACK A TAM PILL BOAT (WDD 1) 44 WAGG-65 WAGG-07 ACK A TAM PILL BOAT (WDD 1) 44 WAGG-65 WAGG-07 ACK A TAM PILL POST (WDD 1) 44 WAGG-65 WAGG-07 ACK A TAM PILL POST (WDD 1) 44 WAGG-67 WAGG-07 ACK A TAM PILL BOAT (WDD 1) 44 WAGG-67 WAGG-07 ACK A TAW PURNARY ACK A 44 WAGG-67 WAGG-08 ACK A TAW PURNARY ACK A 44 WAGG-67 WAGG-09 ACK A TAW PURNARY ACK A ACK A ACK A WAGG-09 ACK A TAW PURNARY ACK A ACK A WAGG-09 ACK A TAW PURNARY ACK A ACK A WAGG-09 ACK A A W PORNARD PWR ACK A ACK A WAGG-09 ACK A TAW PURNAR ACK A WAGG-09	8	MSS-01	BILEVEL WOND 706	32	HACS-77	PITCH SBW TACH A
HACS-01 FSS 12-BIT DATA (MSB) HACS-01 HACS-02 GUZ GUDUD SERIAL OUTPUT (HODD 1) 35 Wacs-19 HACS-04 ACE A 16-BIT COMP STATUS (HSB) 31 WACS-14 HACS-05 ACE A 16-BIT COMP STATUS (HSB) 31 WACS-15 HACS-15 RUL TAMA TORQ DRIVE A 39 WACS-15 HACS-17 RUL TAMA TORQ DRIVE A 39 WACS-15 HACS-17 ACE A TAM PUTCH COMPRISATED SIG 41 WACS-15 HACS-17 ACE A TAM PUTCH COMPRISATED SIG 42 WACS-15 HACS-17 ACE A TAM PUTCH COMPRISATED SIG 42 WACS-15 HACS-18 BLEVEL WODD 1 44 WACS-15 HACS-19 BLEVEL WODD 1 44 WACS-15 HACS-10 HACS-15 HACS-10 HACS-15 HACS-15 HACS-10 HACS-15 HACS-15 HACS-16 HACS-15 HACS-15 HACS-17 HACS-17 HACS-15 HACS-18 HACS-18 HACS-15 HACS-19 HACS-15 HACS-15 HACS-10 HACS-15 HACS-15 HACS-15 HACS-16 HACS-16 HACS-17 HACS-17 HACS-17 HACS-17 HACS-18 HACS-18 HACS		10-87	CDE PRI SERIAL OUTPUT (NORD 1)	2	4B-01	CDZ PRI SERIAL GETPUT (WORD 1)
HB-02 CDZ REDNED SERIAL OUTPUT (40BD 1) 35 WB-02	2	MACS-01	PCG 12-RTF DATA (MCR)	36	MACS-79	STRW SEH TACE A
SC/CU-01 PAYLOAD BEATERS 1 AND 2 STATUS BACS-46 BACS-56 BALL MAC 1000 BILVE A BOLL MAC 1000 BILVE A BACS-91 ACE A TAM PITCH COMPENSATED SIG HACS-92 ACE A TAM PITCH COMPENSATED SIG BACS-13 BACTERY 1 LOW COMPENSATED SIG C/CU-12 SC/CU TEMPERATURE HACS-93 BATTERY 1 LOW CHERENT ACCS-95 CACS A TOW BOLL POSITION C/DH-45 BATTERY 1 LOW CHERENT HACS-96 CACS A TOW BOLL POSITION C/DH-45 BATTERY 1 LOW CHERENT HACS-96 CACS A TOW BOLL POSITION BACS-96 CACS-97 BATTERY 1 TEMP (PRIMARY) BACS-97 BATTERY 1 VOLTACE BATTERY 1 VOLTACE BATTERY 1 VOLTACE BATTERY 2 VOLTACE BATTERY 3 VOLTACE BATTERY 4 VOLTACE BATTERY 5 VOLTACE BATTERY 6 VOLTACE BATTERY 6 VOLTACE BATTERY 6 VOLTACE BATTERY 6 VOLTACE BATTERY 7 VOLTACE BATTERY	· <u>~</u>	HB-02	CDZ DPDUMD SERIAL OUTPUT (MORD 1)	35	FR-02	CINE REDUND SERIAL OUTPUT (WORD 1)
MCS-04	•	10/10/	DAVIOLD SPATES I AND 2 CALTIC	3.5	MA/0-73	מודרם מפנו אומים ערו 19
MACS-56 MACS MACS-67 MACS-97 MACS-70 MACS-70 MACS-70 MACS-70 MACS-70 MACS-70 MACS-71 MACS-70 MACS-10 MACS-10 MACS-10 MACS-10 MACS-10 MACS-11 MATTERY I LOW CURRENT MACS-10 MACS-11 MATTERY I LOW CURRENT MACS-12 MACS-13 MACS-14 MACS-16 MACS-16 MACS-16 MACS-17 MACS-19 MACS-10		יייייייייייייייייייייייייייייייייייייי	TAILUAN DEALERS I AND & SIATUS	? ;	PACO 17	TICE ONE COLOR TOLIS
MAGS-56 BILL MAG TORQ DRIVE A 39 MAGS-75	<u>.</u>	MACS-U4	ACE A 10-BIT CUMP STATUS (RSB)	3	HACS-14	TAU DEER POTOR VOLTS
HACS-27 RIU 2 TEMP	•	MACS-56	ROLL MAG TORQ DRIVE A	38	MACS-75	SKEH SEH MOTOR VOLTS
MACS-90 AGE A TAM ROLL COMPENSATED SIG 41 MAGS-65 MACS-92 AGE A TAM VAN COMPENSATED SIG 41 MAGS-20 MACS-92 AGE A TAM VAN COMPENSATED SIG 42 MAGS-20 MACS-93 AGE A TAM VAN COMPENSATED SIG 43 MAGS-21 FUD-01 SERIAL DATA (MOBD 1) 44 MAGS-51 SG/CU-12 SG/CU TEMPERATURE 44 MAGS-51 AGS-94 AGE A IRU ROLL POSITION 45 MAGS-31 AGS-95 AGE A IRU ROLL POSITION 47 MAGS-31 AGS-96 AGE A IRU ROLL POSITION 47 MAGS-31 SG/CU-10 BILEVEL WORD 01 49 SG/CU-16 SG/CU-11 BILEVEL WORD 01 50 MGS-01 RFS-10 FUL TEMP TEMP (PRIMART) 53 MFS-31 MFS-13 INSTRUMENT LOW CURRENT 54 MFS-31 MFS-14 MODULE TEMP 55 MAGS-01 MFS-15 MODULE TEMP 55 MAGS-01 MFS-16 MODULE TEMP 55 MAGS-01 MFS-17 MFS-18 MAGS-01 MFS-18 MAGS-01 MAGS-01 MFS-19 MATTERT 1 VOLTAGE 60 MAGS-01 MFS-10 MATTERT 2 VOLTAGE 61 MAGS-02 MFS-10 MATTERT 3 VOLTAGE 63 MAGS-18 MFS-16 MAGS-18 MAGS-18 MFS-16 MAGS-18 MAGS-18 MFS-16 MAGS-18 MAGS-18 MFS-16 MAGS-18 MAGS-18 MFS-17 MAGS-18 MAGS-18 MFS-18 MAGS-18 MFS-19 MAGS-18 MFS-19 MAGS-18 MFS-10 MAGS-18 MFS-10 MAGS-18 MFS-10 MAGS-18 MFS-10 MAGS-18 MFS-11 MAGS-18 MFS-12 MAGS-18 MFS-13 MAGS-18 MFS-14 MAGS-18 MFS-16 MAGS-18 MFS-17 MAGS-18 MFS-18 MAGS-18 MFS-19 MAGS-18 MFS-19 MAGS-18 MFS-19 MAGS-18 MFS-19 MAGS-18 MFS-10 MAGS-18 MFS-19 MAGS-19 MFS-10 MAGS-18 MFS-10 MAGS-18 MFS-10 MAGS-18 MFS-	_	::ACS-27	RIU 2 TEMP	20	HACS-62	IRU ROLL MATE 1
HACS-91 ACE A TAM PITCH COMPENSATED SIG 41 HACS-20 HACS-92 ACE A TAM PLACE SIC 42 HACS-21 HACS-92 ACE A TAM PLACE SIC 44 HACS-21 PUD-01 SERIAL DATA (MORD 1) 44 HACS-31 HACS-19 BILEVEL WORD OA 45 HACS-33 HACS-19 BILEVEL WORD OA 45 HACS-33 HACS-96 ACE A TRU BOLL POSITIOH 47 HACS-32 HACS-96 ACE A TRU BOLL POSITIOH 47 HACS-32 HACS-96 ACE A TRU BOLL POSITIOH 47 HACS-32 HACS-96 ACE A TRU BOLL STRAP 48 SC/CU-16 SC/CU-10 BILEVEL WORD O1 50 HACS-91 HPS-10 BILEVEL WORD O2 51 HACS-91 HPS-10 BILEVEL WORD O2 51 HACS-91 HPS-10 BILEVEL WORD O2 51 HACS-91 HPS-10 HACS-10 HACS-10 HACS-10 HPS-11 HACH A HACS-10 HACS-10 HPS-12 BATTERY 1 VOLTACE 60 HACS-09 HPS-20 BATTERY 2 VOLTACE 61 HACS-05 HPS-21 BATTERY 3 VOLTACE 60 HACS-10 HPS-46 BATTERY 3 VOLTACE 61 HACS-76 HPS-56 HOLL SUM TACH A 61 HACS-76 HPS-67 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-76 HACS-77 HACS-77 HACS-77 HACS-77 HACS-77 HACS-77 HACS-77 HACS-77	8	HACS-90	ACE A TAM ROLL COMPENSATED SIG	9	MACS-65	IBU ROLL RATE 2
HACS-92 ACE A TAM YAW COMPERSATED SIG 43 HACS-21	6	MACS-91	ACE A TAM PITCH COMPENSATED SIG	41	MACS-20	BOLL SEE TOUR
PDU-01 SERIAL DATA (40BD 1) 43 HGCS-50		MACS-92	ACK A TAM YAN COMPRISATED SIG	6.2	WACS-21	PITCH SRY TEXP
SC/CU-12 SC/CU-12 SC/CU-12 SC/CU-12 SC/CU-12 SC/CU-12 SC/CU-12 SC/CU-13 BILEVEL WORD 04 1-75-31 BATTERY I LOW CURRENT 45 MACS-38 1-465-31 ACT A INU BOLL FOSTITOH 46 MACS-36 C/OH-45 EXT OSC CASZ TEMP 48 SC/CU-13 SC/CU-10 BILEVEL WORD 01 49 SC/CU-13 SC/CU-11 BILEVEL WORD 02 50 MASS-01 MPS-10 PCU TEMP 1 TEMP (PRIMART) 50 MASS-01 MPS-10 PCU TEMP 1 TEMP (PRIMART) 51 MASS-01 MPS-10 PCU TEMP 1 SCHOOL STRUMBERT 55 C/DH-51 MPS-10 PCU TEMP 1 STRUMBERT 55 C/DH-52 MPS-10 MPS-10 MODULE TEMP 4 55 C/DH-52 MPS-10 MODULE TEMP 4 55 MACS-06 MPS-10 MODULE TEMP 4 55 MACS-06 MPS-10 MODULE TEMP 4 55 MACS-06 MPS-20 BATTERY 1 VOLTACE 60 MACS-07 MPS-70 BATTERY 2 VOLTACE 61 MACS-05 MPS-70 MPS-70 MASS-70 MASS-70 MASS-70 MPS-70 MASS-70 MPS-70 MPS-70 MASS-70 MPS-70 MPS-70 MPS-70 MPS-70 MPS-70 MPS-70 MASS-70 MPS-70 MP		ויים	SPRIAL DATA CRORD 1)	43	MACS-TO	TAM I ROLL KREOR SICHAL
2C/CU-12 SC/CU IERTERATURE HACS-19 BILEVEL WORD OF TRGS-96 ACE A INU ROLL POSITION HACS-31 HACS-36 C/DH-45 EXT OSC CASZ TEMP SC/CU-10 BILEVEL WORD 01 SC/CU-10 BILEVEL WORD 02 SC/CU-10 BILEVEL WORD 02 SC/CU-11 BILEVEL WORD 02 NPS-10 PCU TEMP 1 NPS-10	٠.	10,000		,	2000	
HACS-19 BATTERY LOW CURRENT 45 MACS-38 HACS-31	7	21-03/3S	SC/CU TERFERATURE	9 1	HACK-23	TABLE BREGG STORY
2.PS-31 BATTERY 1 LOW CURRENT 46 MAGS-72 7.AGS-96 ACE A INU ROLL POSITIOH 47 NAGS-96 C.CDI-45 EXI OSC CASZ TEMP 48 SC/CU-13 SC/CU-10 BILEVEL WORD 01 49 SC/CU-16 SC/CU-11 BILEVEL WORD 02 49 SC/CU-16 MPS-10 PCU TEMP 1 50 MFS-01 MPS-10 PCU TEMP 1 SC/CU-16 50 MFS-01 MPS-10 PCU TEMP 1 SC/CU-16 50 MFS-01 MFS-01 MPS-10 PCU TEMP 1 ST MFS-01 MFS-01 <td>m</td> <td>HACS-19</td> <td>BILEYEL HOLD OA</td> <td>5*</td> <td>MACS-38</td> <td>IRU CHAH A RES VOLT</td>	m	HACS-19	BILEYEL HOLD OA	5 *	MACS-38	IRU CHAH A RES VOLT
CAS CAS CAS CAS CAS CAS CAS CAS	4	:.PS-31	BATTERY 1 LOW CURRENT	95	HACS-72	ROLL SAW NOTOR VOLTS
C/DH-45 EXT OSC CASZ TEMP SC/CU-10 BILEVEL WORD 01 SC/CU-11 BILEVEL WORD 01 SC/CU-10 BILEVEL WORD 02 SC/CU-11 BILEVEL WORD 02 SC/CU-10 BILEVEL WORD 02 SC/CU-10 BILEVEL WORD 02 SC/CU-10 BILEVEL WORD 02 SC/CU-10 BILEVEL WORD 02 SC/CU-16 SO MFS-01 MPS-10 POUT TEMP (PRIMART) SS MPS-31 C/DH-51 XPHDR A RP POBMARD PWR C/DH-51 XPHDR A RP POBMARD PWR C/DH-52 XPHDR A RP REPLECTED PWR C/DH-51 XPHDR A RP REPLECTED PWR C/DH-52 XPHDR A RP REPLECTED PWR C/DH-52 XPHDR A RP REPLECTED PWR C/DH-52 XPHDR A RP REPLECTED PWR SS C/DH-51 SW POBWARD PWR SS C/DH-52 SW POBWARD PWR SS C/DH-51 SW POBWARD PWR SS C/DH-51 SW POBWARD PWR SS C/DH-52 SW POBWARD PWR SS C/DH-51 SW POBWARD PWR SS C/DH-51 SW POBWARD PWR SS C/DH-51 SW POBWARD PWR SS C/DH-52 SW POBWARD PWR SS C/DH-53 SW POBWARD PWR SS C/DH-52 SW POBWARD PWR SS C/DH-53 SW POBWARD PWR SS C/DH-53 SW POBWARD PWR SS C/DH-52 SW POBWARD PWR SS C/DH-53 SW POBWARD PWR SS C/DH-54 SW POBWARD PWR SS C/DH-55 SW POBWARD PWR SS C/DH-54 SW POBWARD PWR SS C/D	~	MC3-96	ACE A IRU ROLL POSITION	47	MACS-96	ACE A IRU ROLL FOSITION
SC/CU-10 BILEVEL 60ED 01 SC/CU-11 BILEVEL 60ED 02 RPS-10 PCU TEMP 1 RPS-10 PCU TEMP 1 RPS-10 PCU TEMP 1 RPS-36 RPS-31 RPS-41 RPS-36 RPS-37 RPS-36 RPS-36 RPS-37 RPS-36 RPS-36 RPS-37 RPS-36 RPS-37 RPS	٠	C/DH-45	EXT OSC CASZ TEMP	84	SC/CU-13	d H
SC/CU-II BILEVEL WORD 02 SC/CU-II BILEVEL WORD 02 MPS-10 MPS-10 MPS-10 MPS-15 INSTRUMZIN'S LOW CURREIT MPS-15 INSTRUMZIN'S LOW CURREIT S MPS-35 MPS-35 MPS-35 C/DH-51 Z PHUB A RP PORWARD PUR C/DH-52 MPS-19 M		20/01-10	RILEVEL KORD OI	69	91-10/08	_
MPS-10 PCU TEMP 1 MPS-04	. a	80/00	B119701 19080 03	÷ 5	0-664	STATIS LEGED 1
MPS-08		00/00 MDC-10		3 5	90	STATIS UNE A
MPS-10		200		: :		2014 DEC 1011 DEC 1011 DEC
MPS-35 INSTRUMENTS LOW CURREIT 53 MPS-35 MPS-36 C/DH-COURT 54 MPS-36 MPS-36 C/DH-51 X PHDR A RP REFLECTED PHR 55 C/DH-51 C/DH-52 X PHDR A RP REFLECTED PHR 56 C/DH-52 MPS-16 MODULE TEMP 4 57 MACS-06 MPS-19 MODULE TEMP 4 58 MACS-06 MPS-19 MACS-06 MACS-07 MPS-10 BATTERY 1 VOLTACE 60 MACS-07 MPS-20 BATTERY 2 VOLTACE 61 MACS-05 MPS-46 DATTERY 3 VOLTACE 62 MACS-78 MPS-76 ROLL SRW TACH A 63 MACS-78 MPS-76 ROLL SRW TACH A 63 MACS-78 MPS-76 MACS-78 MPS-76 MACS-78 MPS-76 MACS-78 MPS-76 MACS-78 MPS-77 MACS-78 MPS-77 MACS-78 MPS-78 MACS-78 MPS-78 MACS-78 MPS-78 MACS-78 MPS-79 MACS-78 MPS-79 MACS-78 MPS-70 MACS-78	.	MFS-08	BALTERY 1 TEMP (PRIMARI)	70	16.5.0 10.00	SULAN ANKAT BUS VOLIAGE
MPS-36 C/DH CURRENT 54 MPS-36 C/DH-51 XPHDR A RP PORMARD PUR 55 C/DH-51 C/DH-51 XPHDR A RP PORMARD PUR 55 C/DH-51 C/DH-51 SPANDLE TEMP 1 STA MACS-05 MPS-19 MDDULE TEMP 4 SB MACS-06 MPS-19 MPS-19 MPS-20 BATTERY 1 VOLTACE 60 MACS-09 MPS-21 BATTERY 2 VOLTACE 60 MACS-09 MPS-21 BATTERY 3 VOLTACE 61 MACS-05 MPS-76 BOLL SEW TACH A 63 MACS-76 MPS-76 MPS-76 MACS-76 MPS-76 MACS-76 MPS-76 MACS-76 MPS-76 MACS-76 MACS-76 MPS-76 MACS-76 MACS-76 MPS-76 MACS-76 MPS-76 MACS-76 MACS-76 MPS-76 MACS-76 MACS-76 MPS-76 MACS-76 MACS-76 MACS-76 MPS-76 MACS-76 MPS-76 MACS-76 MPS-76 MACS-76 MPS-76 MACS-76 MPS-76	_	MPS-35	INSTRUMENTS LOW CURRENT	2	MPS-35	INSTRUMENTS LOW CURRENT
C/DH-51 XPHDR A RP POBMARD PWR 55 C/DH-51 NDULE TEMP 1	7	MPS-38	C/DH CURRENT	*	MPS-38	c/dh current
C/DH-52 XPHDR A RP REPLECTED PHR 56 C/DH-52 MPS-16 MODULE TEMP 1 57 HAGS-06 MPS-19 MODULE TEMP 4 58 KAGS-07 MPS-19 MODULE TEMP 4 59 MAGS-07 MPS-19 MAGS-07 MPS-20 BATTERY 1 VOLTAGE 60 MAGS-09 MPS-46 DATTERY 3 VOLTAGE 61 MAGS-13 MPS-46 BATTERY 3 VOLTAGE 62 MAGS-13 MPS-56 BATTERY 3 VOLTAGE 63 MAGS-13	0	C/DH-51	XPHDR A RP FORMARD PUR	55	c/pn-51	XPNDA A RF FORWARD PWR
MPS-16 MODULE TEMP ST NACS-06 MPS-19	•	C/DH-52	YPHOR A RP REPLECTED PUR	95	C/DE-52	XPNDA A RP REFLECTED PUR
MPS-19 MODULE TEMP 4 58 MACS-07 MPS-19 MODULE TEMP 4 58 MACS-07 MPS-19 MPS-20 BATTERY 1 VOLTAGE 60 MACS-09 MPS-21 BATTERY 2 VOLTAGE 61 MACS-05 MPS-46 BATTERY 3 VOLTAGE 62 MACS-05 MPS-76 BOLL SEW TACH A 63 MACS-78		¥1-30X	MONITUR STAND 1	5	40.44	PUCT I WOOD I 16-RIT DATA (MGR)
MPS-19 HODOLK TERF 4 MPS-13 BPA TEMP MPS-20 BATTERY 1 VOLTAGE MPS-21 BATTERY 2 VOLTAGE MPS-46 BATTERY 3 VOLTAGE MPS-76 BOLL SEW TACH A 63 MACS-76	•	01-010	TOTOTO TENE		200	
HPS-13 BPA TEMP 59 MACS-06 HPS-20 BATTERY 1 VOLTAGE 60 MACS-09 HPS-21 BATTERY 2 VOLTAGE 61 MACS-09 HPS-46 BATTERY 3 VOLTAGE 62 MACS-13 HPS-76 BOLL SAW TACH A. 63 MACS-78	0	MPS-19	MODULE TERR 4	200	つしのこでは	(ach) Alan Ila-o. 2 (ach) I this
MPS-20 BATTERY I VOLTAGE 60 MACS-09 II MPS-21 BATTERY 2 VOLTAGE 61 MACS-05 MPS-46 BATTERY 3 VOLTAGE 62 MACS-13 MPS-76 BOLL SEW TACH A 63 MACS-78	_	MPS-13	DPA TEMP	88	MACS-08	FHST 2 BORD 1 16-BIT DATA (KSB)
HPS-21 BATTERY 2 VOLTAGE 61 HACS-05 HPS-46 BATTERY 3 VOLTAGE 62 HACS-13 MPS-76 ROLL SEW TACH A 63 MACS-78	60	MPS-20	BATTERY 1 VOLTAGE	3	MACS-09	FHST 2 WORD 2 16-BIT DATA (MSB)
HPS-46 DATTERT 3 VOLTAGE 62 HACS-13 MPS-76 BOLL SEW TACH A 63 MACS-78	•	MPS-21	BATTERY 2 VOLTAGE	19	HAC3-05	ACE A 24-81T SHE STATUS (WORD 1)
MPS-76 BOLL SRW TACH A. 63 MACS-78 TAB SRW TACH	٠ د	74-50M	DATTOR T UNITAGE	3 3	MACG-13	A P Q 36-NT CHE CTATIC (LINE)
HPS-76 ROLL SEW TACH A. PAGS-78	2	25-676	DALICAL S VOLIME			
	=	MPS-76	ROLL SEW TACH A	5	MACS-18	IAW SKW TACK A
			-			

Table 2-19. Subcommutator 3 - Minor Frame Word 96

ORIGINAL PAGE IS OF POOR QUALITY

Minor Prese Ausber	User 1D	Description	Minor Fress Humber	Voer 1D	Description
	87 -1 14	PH-IA TANY TENP	96	KAC8-77	PITCH SAN TACK A
		GDE PRI SERIAL OUTPUT (WORD 1)	26	10-EA	GDE PRI SEGIAL OUTPUT (4020 1)
99	57	BOLL MAG TORO DRIVE B	6	HACS-79	SERU SEU TACH A
?		GDZ REDUND SZRIAL OUTPUT (WORD 1)	8 6	₩B-02	CDE REDUEND SERIAL COTPUT (WORD 1)
	12	ACE B 16-BIT COMP STATUS (MSB)	8	MACS-73	PITCH SHW MOTOR VOLTS
69		XPHDS A PUR AMP TEMP	101	MACS-74	TAH SRU MOTOR VOLTS
		APHOR A TCKO TEMP	102	MACS-75	exeu seh hotor volts
	4	PAYLOAD REATERS 7 AND 8 STATUS	103	MACS-62	IEU ROLL RATE 1
72		BILEVEL WORD OI	100	HACS-65	IRU ROLL RATE 2
	KACS-32	IRU CHAN A TEMP	105	PM-24	PRE A/B ATT CRITIL ENA/DISA
		Inu chan b Temp	901	C/DR-24	BILEVEL HOED 140
	MACS-34	IRU CHAN C TEMP	107	C/DB-21	BILEVEL WORD 070
	MACS-14	ACE A 24-BIT COMPUTER/PAYS WORD 1	108	C/DB-18	BILEVEL CORD 040
		ACE B 24-BIT COMPUTER/DATS WORD 1	109	PM-27	ACS DIR CORT INPUTS ENA/DISA
	C/DH-14	PHP A STATUS	011	HACS-72	ROLL SHE MOTOR VOLTS
		ACE A IRU ROLL POSITION	111	MACS-96	ACE A IGU ROLL FOSITION
_	C/DH-34	RIU 1 A/B INTERSPACE TEMP	112	Pr-32	PHE A POS AC TORQ PULSE GEN
		STACC RIU & TEMP	113	PH-33	PHE D POS AC TORQ PULSE CEN
		STANDBY CU CHO COUNTER	114	PH-37	PHE A TR COMT REM A, C/B, D ENA/DISA
	C/DH-32	STACC ALU A TEMP	115	PM38	PKZ B TR COST REM A,C/B,D ENA/DISA
		DATTERY 1 TEMP (REDUNDANT)	116	KPS-41	SOLAR ARRAT BUS VOLTACE
	MPS-35	INSTRUMENTS LOW CURRENT	117	MP3-35	Instruments Low Current
		C/DH CURRENT	118	MPS-38	C/DH CURGENT
	C/DH-51	apada a ny formand phr	119	C/DH-51	XPHDE A RF FORMARD PHR
	C/DH-52	XPHDS A RF REFLECTED PUR	120	C/DH-52	XPHDR A RP REFLECTED PUR
_	Φ.	RIU 4A TEMP	121	MACS-06	FHST 1 WORD 1 16-BIT DATA (MSB)
_	_	RIU 48 TEMP	122	MACS-07	PHST 1 GOED 2 16-BIT DATA (MSB)
		ACE A/B +5V REG·V	123	MACS-03	PHST 2 WORD 1 16-BIT DATA (MSB)
		ACE A/B -15V REG V	124	MACS-09	PHST 2 WORD 2 16-BIT DATA (MSB)
93		ACE A/B +28V REG V	125	SC/CU-07	
	SC/CU-24	SC/CU +25V B POWER	126	PH-21	PME A/B LTCH VALVE DRYR BNA/DISA
		A 27.7 482 7.700	193	MACG-78	AAU CRU TAFR A

Table 2-19. Subcommutator 3 - Minor Frence Word 96

Minor			Minor Prame		
Pumber	Voer 1D	Description	Rumber	User ID	Secription
8	MSS-02	BILEVEL MORD 601	32	MACS-01	PITCH SEW TACH B
6	WB-01	GDZ PRI SERIAL OUTPUT (KORD 2)	33	NB-01	GDE PRI SERIAL CUTPUT (WORD 2)
07	MACS-01	FSS 32-BIT DATA	34	MACS-83	SEEN SEW TACH .
03	AB-02	CDE REDUND SERIAL OUTPUT (WORD 2)	35	MB-02	CDE REDUKTO SEGIAL CUTPUT (NORD 2)
40	sc/cu-02	PAYLOAD HEATERS 3 AND 4 STATUS	36	C/DH-43	IPHDA B TCEO TEMP
02	MACS-04	ACE A 16-BIT CORP STATUS (LSB)	37	PM-03	REM A TEMP 1 (PRE-A), TEMP 3 (PRE-B)
90	MACS-58	PITCH MAG TORQ DRIVE A	38	3-5	REM A TEMP 2 (PRE-A), TEMP 4 (PME-B)
07	KACS-26	PSS TEMP	39	MACS-63	IRU PITCH RATE 1
80	MACS-93	ACE B TAM ROLL COMPENSATED SIG	40	MACS-66	IRU PITCH BATE 2
60	MACS-94	ACE B TAM PITCH COMPENSATED SIG	14	MACS-22	IAW SAW TEMP
9	MACS-95	ACE B TAM YAU COMPENSATED SIG	42	HACS-23	SKRH SZH TZMP
11	PDU-01	SERIAL DATA (WORD 2)	£ 3	MACS-51	TAM 1 PITCH ERROR SIGHAL
12	MACS-44	FHST 1 STAR INTERSITY	44	MACS-54	IAM 2 PITCH ERROR SIGNAL
13	MACS-46	CSS 1 PITCH POSITION EDROR	£	MACS-39	IRU CHAM B REG VOLT
14	HPS-32	BATTERY 2 LOW CURRENT	94	SC/CU-23	8C/CU +5V B POSTR
S Ť	MACS-99	ACE B IRU ROLL POSITION	47	M4C3-99	ACE B IRU ROLL POSITION
16	C/DH-46	ext osc oven temp	97	SC/CU-14	SPACECRAPT STRUCTURE TEMP 2
17	Prf-01	BILEVEL WORD OI	29	SC/CU-17	SPACECRAPT STRUCTURE TRMP 5
18	MPS-27	SCA DC/DC CONV A VOLTAGE	જ	NP3-02	STATUS WORD 2
61	MPS-11	PCU TEMP 2	22	MPS-05	STATUS WOLD 5
70	MPS-09	BATTERY 2 TEMP (PRIMARY)	52	MPS-33	CS 1 ARRAY/GHD PUR CURRENT
21	C/DII-37	TEMP BETWEEN IPNDAS A AND B	53	MACS-24	OPTIC BELICH TOND (PHST)
22	MPS-39	SC/CU, MPS CURRENT	3 ¢	MPS-39	SC/CU, MPS CUBARNT
23	C/DH-54	XPHDR B RF FORMARD PHR	55	C/DE-54	XPHDA B RF FORMADD PWA
58	C/DH-55	XPHDA B DF GEPLECTED PWR	26	C/DH-55	APHDE S RF REFLECTED PHR
25	MPS-17	MODULE TEMP 2	57	MACS-06	PEST 1 MOED 1 16-DIT DATA (LSB)
3 6	MPS-22	LOAD BUS VOLTAGE	28	MACS-97	PHST 1 HOLD 2 16-81T DATA (LSB)
27	MPS-15	SCA TEMP	29	MACS-08	FIIST 2 HORD 1 16-BIT DATA (LSB)
28	MPS-23	DATTERY 1 3RD ELECTRODE VOLTAGE	9	XACS-09	FHST 2 GORD 2 16-BIT DATA (LSB)
53	4PS-24	BATTERY 2 3RD ELECTRODE VOLTAGE	19	MACS-05	ACE A 24-BIT SHE STATUS (WORD 2)
30	MPS-47	BATTERY 3 2RD ELECTRODE VOLTAGE	62	MACS-13	ACE B 24-DIT SHE STATUS (WOLD 2)
31	MPS-80	ROLL SRW TACH E	63	MA.CS-82	TAW SEW TACE D

Table 2-20. Subcommutator 4 - Minor Frame Word 97

ORIGINAL PAGE IS OF POOR QUALITY

Promo Number	User ID	Description	Minor Frene Resider	User ID	Description
	69-Md	GMC27 ISIN V I HA	ş	MACS-81	PITCH SEN TACH A
	KB-01	CDC PRI SRRIAL OVTPUT (WORD 2)	9.6	K9-01	CDE PRI SERIAL CHEPUT (NORD 2)
99	MACS-59	PITCH MAG TORO DRIVE B	65	MACS-83	SKEW SEW TACH B
67	₩D-02	CDE REDUND SERIAL OUTPUT (WORD 2)	8	VB-02	COE REDUND SERIAL CUTPUT (WORD 2)
68	MACS-12	(88)	100	MACS-67	CSS 1 YAW POSITION EPROS
	C/DH-44	XPNDR B PHR ANP TEMP	101	PACS-48	CSS 2 PITCH POSITION REBOR
_	C/DH-40	MEH 0.3 INTERSPACE TOMP	102	MACS-49	CSS 2 YAW POSITION ERROR
	SC/CU-05	SPACECRAFT HEATERS 1.2.3 STATUS	103	MACS-63	IRU PITCH RATE I
	MACS-17	DILEYEL YORD 02	104	KACS-65	IRU PITCU RATE 2
	MACS-41	INU CHAN A NOTOR CURRENT	105	C/DB-25	BILEVEL GOED 150
74	MACS-42	IRU CUAN B MOTOR CURRENT	106	C/D3-17	BILEVEL SCRD 020
	HACS-43	IRU CHAM C MOTOR CURRENT	107	C/D3-22	BILEVEL BORD 110
	MACS-14	ACE A 24-BIT COMPUTER/PAYS WORD 2	108	C/DB-23	BILEVEL GORD 130
	MAC3-15	9	109	FN-28	PRE A POS AC REH A/C ENA/DISA
	C/DIF-15	PMP B STATUS	011	PH-30	PAE D POS AC REM A/C RHA/DISA
79	MACS-99	ACE B IGU ROLL POSITION	111	HAC3-99	ACE B IRU ROLL POSITION
	MACS-35	OPTIC BERCH TEMP (IQU)	112	Fri-33	PHE A REG AC TORQ PULSE CEN
	C/DH-36	STACC STIRT B TEMP	113	PH-35	PAZ B NEG AC TORQ PULSE CEN
	C/DH-09	CU A PLEX FORMAT LOAD/VERIFY	114	PH-39	REM A/C TRANSL COST THRUST ON/OFF
	C/DH-35	STACC STINT A TEMP	115	FX-60	REM B/D TRARSL CONT THRUST ON/OPP
	KPS-43	DATTERY 2 TEMP (REDUNDART)	116	MPS-33	CS1 ARDAY/GED PGB CURRENT
	PH-11	TANK 1 TEMP	117	Ph-20	PRI/REDUED BEATER DUS EMA/DIS
98	MPS-39	SC/CU, HPS CURRENT	116	MP8-39	SC/CU, MPS CURRENT
	C/DH-54	XPHDS B RF POSHARD PWR	119	C/DB-54	EPNOG B RF PORMARD PUR
	C/DH-55	IPNDS D RF REFLECTED PWR	120	C/DB-55	XPNDA B RF REFLECTED PUR
	PH-09	ACH D TEMP 1 (PME-A). TEMP 3 (PME-B)	121	MACS-06	FRST 1 ROED 1 16-DIT DATA (LSB)
_	PH-10	REM D TEMP 2 (PME-A), TEMP 4 (PME-B)	122	MACS-07	
	MACS-85	ACE A/8 +5V REG V	123	MACS-03	PHST 2 WORD 1 16-BIT DATA (LSB)
	MACS-88	ACE A -18V REG V	124	MACS-09	FHST 2 WOED 2 16-BIT DATA (LSB)
	MACS-89	ACE B +18V RZG V	125	SC/CII-08	ARRAY DEPLOY PYRO STATUS
	PH-12	TAKE 2 TEMP	126	FH-22	LATCH VALVES 1.2.3 OPEN/CLOSED

Table 2-20. Subcosautator 4 - Maor Frees Word 97

ORIGINAL PAGE IS OF POOR QUALITY

Minor			Minor		
Number	User ID	Description	Number	User ID	Description
00	MSS-03	BILEVEL WORD 802	32	MACS-69	PITCH SAW DRIVE CONTROL
6	WB-01	CDE PRI SERIAL OUTPUT (WORD 3)	33	WB-01	COZ Pal Serial Cutput (Nord 3)
05	MACS-01	PSS 32-BIT DATA	34	MACS-71	SKEW SEH DRIVE CONTROL
03	70-8A	CDE REDUND SERIAL OUTPUT (HORD 3)	35	4D-02	COR REDUND SURIAL OUTPUT (WORD 2)
30	SC/CU-03	PAYLOAD REATERS 5 AND 6 STATUS	36	C/DB-31	Pou Temp
05	MPS-37	MACS, PM CURRENT	37	MPS-37	HACS, PM CURRENT
90	MACS-60	YAW MAG TORQ DRIVE A	38	MPS44	DATTERY 3 TEMP (PRIMARY)
0	C/DH-27	BILEVEL WORD 170	39	MACS-64	IBH YAW RATE 1
80	MACS-30	SAW DRIVE ELECTRONICS TEMP	40	MACS-67	IRU YAN RATE 2
60	C/DH-50	APRIDR A ACC LEVEL	41	C/DH-50	APNDA A ACC LEVEL
10	C/DH-53	XPNDA B AGC LEVEL	42	C/DH-53	APHDA 6 ACC LEVEL
11	PDU-01	SERIAL DATA (GORD 3)	43	MACS-52	TAM 1 YAW BEROR SICNAL
12	MACS-45	FHST 2 STAR INTENSITY	44	MACS-55	TAM 2 YAW BEROR SICHAL
13	WB-03	DSU PRIMARY STATUS WORD	45	MACS-40	IRU CHAM C REG VOLTS
*1 ?:	MPS-50	DATTERY 3 LOW CURRENT	46	C/03-28	PAP TEMP
	SC/CU-21	SC/CU +5V A POWER	14	PH-19	FUEL TANK PRESSURE
ر 16	C/DH-47	EXT OSC OVEH VOLTAGE	84	sc/cu-15	SPACECRAFT STRUCTURE TEMP 3
11	PH-02	BILEVEL HORD 02	69	SC/CU-17	SPACECRAFT STRUCTURE TEMP 6
91	MPS-28	SCA DC/DC COMY B VOLTAGE	ន	MPS-03	STATUS WORD 3
61	MPS-12	PCU TEMP 3	รร	MPS-06	STATUS WORD 6
20	C/DH-38	TEMP HEAR HTR ASIO THERMOSTAT	25	MPS-34	CS 2 ARRAY/GID PUR CURURNT
12	C/DH-97	ACE A IRU PITCH POSITION	53	MACS-97	ACE A IRU PITCH POSITION
1 22	MACS-100	ACE B IRU PITCH POSITION	ş	MACS-100	ACE B TRU PITCH POSITION
23	PH-13	TANK 3 TEMP	35	MPS-18	HODULA TEMP 3
24	PH-14	LTCH VLV 1 (PMZ-A), L/V 4 (PMZ-B)	56	MPS-07	RIU 3 STATUS
25	MACS-98	ACE A IRU YAW POSITION	57	HAC3-98	ACE A RU YAN POSITION
56	MACS-101	ACE B IRU YAW POSITION	28	MACS-101	ACE B IRU YAH POSITION
27	MPS-14	Pau temp	29	C/DB-39	TEMP NEAR BTR A611 THERMOSTAT
28	MPS-25	BATTERY 1 DIPFERENTIAL VOLTAGE	9	MAC8-31	TORG DRIVE BLECTRONICS TEMP
29	MPS-26	BATTERY 2 DIPPERENTIAL VOLTAGE	19	MACS-05	ACE A 24-BIT SHE STATUS (WORD 3)
30	MPS-48	BATTERY 3 DIPPERENTIAL VOLTAGE	62	MACS-13	ACZ B 24-BIT SHE STATUS (WORD 3)
31	MACS-68	BOLL SRW DRIVE CONTROL	63	MACS-70	YAW SEW DRIVE CONTROL
_					

Table 2-21. Subcommutator 5 - Minor Freme Hord 98

ORIGINAL PAGE IS OF POOR QUALITY

	Description	Frane Kunber	User ID	Description
4 MPS-36	INSTRUMENTS HIGH CURRENT	96	MACS-69	PITCH SRW DIRVE CONTROL
S 478-01	CDE PRI SERIAL OUTPUT (WORD 3)	97	10-GH	CDE PRI SERIAL CUTPUT (WORD 3)
6 MACS-61	YAH MAG TORQ DRIVE B	98	MACS-71	SKEH SEW DRIVE CONTLOL
7 WB-02	CDE REDUND SERIAL OUTPUT (WORD 3)	66	MB-02	CDE REDUND SERIAL OUTPUT (WORD 3)
B MACS-25	PSU TEMP	8	MACS-37	PHST 2 TEMP
9 MPS-37	MACS, PM CURRENT	101	MPS-37	HACS, FH CURRENT
D PM-50	PM-1A LINE TEMPERATURE	102	MPS-45	BATTERY 3 TEMP (REDUNDANT)
3C/CO-06	SPACECRAFT HEATERS 4,5,6 STATUS	103	MACS-64	IRU YAW RATE 1
_	BILEVEL WORD 03	104	MACS-67	IRU YAW BATE 2
	XPNDR A AGC LEVEL	105	C/DH-50	APNDE A AGC LEVEL
	XPNDR B AGC LEVEL	901	C/DH-53	APNDH B AGC LEVEL
	ACE A PUR COND TEMP	107	C/DH-49	+28V UNREGULATED BUS
_	ACE A 24-BIT COMPUTER/PAYS WORD 3	108	C/DII-26	DILEVEL WORD 160
	ACE B 24-BIT COMPUTER/PAYS WORD 3	109	PK-29	PHE A NEC AC REM A/C BH/, DISA
	ACE 9 PUR COND TEMP	110	PH~31	PME B REG AC REM A/C BNA/DISA
	sc/cu +25v A Pouer	111	MACS-36	PHST 1 TEMP
	STACC CU A TEMP	112	PH-25	PHE A 40/100/280 MS PULSE SELECT
1 C/DH-30	STACC CU B TEMP	113	PH-26	PRE B 40/100/280 MS PULSE SELECT
	CU B FLEX FORMAT LOAD/VERIFY	911	MPS-03	STATUS WORD 3
	STIMT A STATUS	115	PH-36	PHE A/B TRANSL CONT ENA/DISA
•	STINT B STATUS	116	MPS-34	CS2 ARRAY/GND PYR CURRENT
_	ACE A 1RU PITCH POSITION	117	MACS-97	ACE A IRU PITCH POSITION
_	ACE B IRU PITCH POSITION	113	MACS-100	ACE B IRU PITCH POSITION
	REM C TEMP 1 (PME-A), TEMP 3 (PME-B)	119	C/DH-20	BILEVEL WORD 060
3 PM-08	REM C TEMP 2 (PME-A), TEMP 4 (PME-B)	120	C/ NB-19	BILEVEL WORD 050
HACS-98	ACE A IRU YAW POSITION	121	MAC., 98	ACE A IRU YAW POSITION
D KACS-101	ACE B IRU YAW POSITION	122	MACS-101	ACE B IRU YAU POSITION
l PH-15	TEMP LTCH VLV 2 (PME-A), LTCH VLV 5 (PME-B)	123	PM-05	BEM B TEMP : (PME-A), TEMP 3 (PME-B)
2 PH-16	TEMP LTCH VLV 3 (PME-A), LTCH VLV 6 (PME-B)	124	PH-06	REM B TEMP 2 (PME-A), TEMP 4 (PME-B)
93 PH-17	BRAH TEMP, CENTER (PRE-A), PRE (PRE-B)	125	SC/Cn-09	JETTISON PYRO STATUS
4 PM-18	BEAN TEMP REM A (PME-A), REM B (PME-B)	971	PH-23	LATCH VALVES 4.5.6 OPEN/CLOSED
07 0017				

Table 2-21. Subcorautator 5 - Minor Frems Word 98

ORIGINAL PAGE IS OF POOR QUALITY

March Marc	Prese Busber	User 1D	Description	Minor Franc Eumber	Vaer ID	Lescription
WB-OL CEC FIT SERIAL OUTPUT (WORD 4) 31 WB-OL CEC FIT SERIAL OUTPUT (WORD 4) 31 WB-OL WEB-OL WG-SC-OL REDURD SERIAL OUTPUT (WORD 4) 34 WB-DL WEB-OL WEB	_	Ç V X	TI FUEL HOSD ROT	; ;	19-37	
Wilder Fig. 12-Bit Data (LEB) Wilder Wil		10-63	CIE POI SERIAL OFFRITE (LOSD A)	,		CTR POI GRAIM. COPPUT CURB AN
WB-02 CDE REDUGE SELLIL OUTPUT (MORD 4) 35 WB-02 CDE REDUGE SELLIL OUTPUT (MORD 4) 35 WB-02 CDE WEND 4 WEND 4 </td <td></td> <td>KACS-01</td> <td>PSS 32-81T DATA (LSB)</td> <td>5 %</td> <td>H3-28</td> <td>UEM 4T PAKEL (PSD) PEND</td>		KACS-01	PSS 32-81T DATA (LSB)	5 %	H3-28	UEM 4T PAKEL (PSD) PEND
18-60 RIU 9A TEMP 36 45-35 473 48-60 BILLYEL NOED OIL 37 46-35 473 48-60 BILLYEL NOED OIL 37 46-35 473 48-47 KU TATA PRI BUS CHREATT 40 40 40 48-48 KU TATA REDUGO BELIX CHREATT 40 43 40-36 511L 48-45 KU TATA REDUGO BELIX CHREATT 41 40 42 511L 48-45 KU TATA REDUGO BELIX CHREATT 41 40 42 511L 48-45 KU TATA REDUGO BELIX CHREATT 41 40 42 511L 48-45 KU TATA REDUGO BELIX CHREATT 41 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40 44 40		VA -02	CD2 agoing Spaid, Offpit (10050 6)	; ;:	70-65	CIE REDIED STAIN, OFFITH (MORD A)
HB-O5 BILZVEL WOED OI		VB-40	BILL OA TONO	` *	SE-55	GROAD DATIGOUS VANA A MAN
ESAM-11 ESA-1 SERSOR STATUS 39 ESAM-11		\$0-E5	ATTENDED OF	2 6	7 - E5	draw store with the war
WB-46 KU TATA REDURD GUS CURRENT 40 GFS-04 WB-47 KU TATA REDURD GUS CURRENT 40 GFS-04 WB-45 KU TATA REDURD GUS CURRENT 41 40 GFS-04 WB-45 KU TATA REDURD GUS CURRENT 42 40 GFS-04 WB-45 KU TATA REDURD GUS CURRENT 43 WB-30 44 WB-30 WB-06 BILLEVEL WADD OZ 45 WB-30 45 WB-30 45 WB-30 WB-06 BILLEVEL WADD OZ 45 WB-30 45 WB-30 45 WB-30 WB-30 WB-30 45 WB-30 WB-30 WB-30 WB-30 WB-30 WB-31 WB-31 WB-31 WB-31 WB-31 WB-31 WB-31 WB-31 WB-31 WB-32 WB-32 WB-33 WB-33<		FC 014-11	DOALL COMOON CHATING	` ~	24 424	96A-1 498 :// Q44-110
WB-40 KU TATA PRI BUS CURERT WB-44 KU TATA PRI RELIX CURERT WB-45 KU TATA PRI RELIX CURERT WB-45 KU TATA REDUMB BELIX CURERT PU-01 FERILL DATA (WOLD 4) 44 WB-36 WB-66 BILEVEL WELD 02 45 WB-36 WB-66 BILEVEL WELD 02 45 WB-36 WB-42 FWR CORV PRI VOLT MONITOR 47 WB-37 WB-42 FWR CORV PRI VOLT MONITOR 48 WB-17 WB-67 FWR SUPPLY 2 CURERT 50 TW-01 TH-02 FWR SUPPLY 2 CURERT 51 TH-02 TH-03 FWR SUPPLY 2 CURERT 51 TH-02 TH-04 FWR SUPPLY 2 CURERT 51 TH-02 WB-54 AT RCVR REL AZIM ERROR 55 WB-54 WB-54 AT RCVR REL RELORD 56 WB-55 WB-55 AT RCVR REL RELORD 58 WB-55 WB-55 AT RCVR REL RELORD 58 WB-55 WB-55 AT RCVR REL SCARE CORD 56 WB-56 AT RCVR REL SCARE CORD 56 WB-57 AT RCVR REL SCARE CORD 56 WB-58 AT RCVR REL SCARE CORD 56 WB-59 AT RCVR REL SCARE CORD 56 WB-50 AT RCVR REL SCARE CORD 56 WB-51 AT RCVR REL SCARE CORD 56			CON-1 SCHOOL SINGUS	9 :	T-William	Fort Consol albida
WB-47 KU TVTA REDUCE GELT CURRENT 41		27-27	KU TYTA PRI BUS CURRENT	6	25	SILEVEL BOXD :02
WB-44 KU TMTA PRI RELIX CHRENT 41		/ 5- 9A	KU TATA REDUKD BUS CURRENT	9	22.0	DILLYSL BORD 703
WB-45 KU TMTA REDUND BELIK CURRENT 42 WB-45 KU TMTA REDUND BELIK CURRENT 43 WB-06 WB-06 BILEVEL WADD 02 44 WB-10 WB-06 BILEVEL WADD 02 45 WB-16 WB-07 BILEVEL WADD 02 45 WB-16 WB-06 BILEVEL WADD 02 45 WB-16 WB-07 BILEVEL WADD 02 45 WB-17 WB-07 BILEVEL WAD WADT WADD 02 46 WB-17 WB-17 CORVER VILL CURRENT 49 WB-18 WB-18 BILEVEL WAD WADT WADD 02 51 TM-01 TM-01 PUR SUPPLY 2 CURRENT 50 TM-02 TM-02 PUR SUPPLY 2 CURRENT 51 TM-02 TM-03 CDVU +6V STATUS 54 BSAH-12 MB-54 AT RCYR RED AZIM ERROR 56 WB-54 WB-55 AT RCYR RED ELEVECTH 50 WB-54 WB-57 AT RCYR RED SIGE STREKETH 50 WB-53 WB-53 AT RCYR RED SIGE STREKETH		NB-64	KU TYTA PAI KELIX CURRENT	14		
PDU-01 PERIAL DATA (WOED 4) 41 40-08 Wa-06 BILEVEL WOED 02 44 46-30 Wa-06 BILEVEL WOED 02 45 46-30 Wa-06 BILEVEL WOED 02 45 46-30 Wa-06 BEST OCC REC VOLT 47 47-31 Wa-17 Wa-18 WOED 1 47 47-31 Wa-18 Wa-18 WOED 1 WA-18 47 Wa-18 Wa-19 PWR SUPPLY 2 CURRENT 50 TW-01 TH-01 PWR SUPPLY 2 CURRENT 50 TW-01 TH-02 PWR SUPPLY 2 CURRENT 51 TR-02 TH-03 PWR SUPPLY 2 CURRENT 51 TR-05 Wa-56 AT RCYR RED AZIM ERROR 55 Wa-56 Wa-56 AT RCYR RED AZIM ERROR 55 Wa-56 Wa-56 AT RCYR RED ELEV ERROR 56 Wa-56 Wa-56 AT RCYR RED SIC STREKCTH 59 Wa-57 Wa-57 AT RCYR RED SIC STREKCTH 50 Wa-57 Wa-58 AT RCYR RED SIC STREKCTH 60 Wa-57 Wa-59 AT RCYR RED SIC STREKCTH 60 Wa-57 Wa-50 AT RCYR RED SIC STREKCTH 60 Wa-57 Wa-51 AT RCYR RED SIC STREKCTH 60 Wa-57 Wa-52 AT RCYR RED SIC STREKCTH 60 Wa-57 Wa-53 AT RCYR RED SIC STREKCTH 60 Wa-57 Wa-59 GDA ELRY ROTOR TEMP PRIME 61 Wa-99 Wa-50 GDA ELRY ROTOR TEMP PRIME 63 Wa-53 Wa-58 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-59 Wa-50 Wa-50 Wa-50 Wa-50 Wa-50		WB-45	KU TYTA REDUKO BELIK CURRENT	42		
WB-06 EILEVEL WORD OZ 44 WB-30 WB-04 DSU REDUMDABIT STATUS WORD 45 WB-36 WB-42 PUR CORV PRI VOLT MONITOR 45 WB-36 C/OH-48 EXT OSC REC VOLT 48 WB-17 IM RIUG RIU OG TEMP 49 WB-58 TM-01 PUR SUPPLY I CURRENT 50 TM-01 TM-02 PUR SUPPLY I CURRENT 50 TM-02 TM-03 PUR SUPPLY I CURRENT 50 TM-02 MB-54 AT RCVR RED AZIM ERROR 55 MB-54 WB-54 AT RCVR RED ELEV ERROR 56 WB-55 WB-55 AT RCVR RED ELEV ERROR 57 WB-57 WB-54 AT RCVR RED ELEV ERROR 50 WB-53 WB-53 AT RCVR RED ELEV ERROR		PD0-01	SERIAL DATA (WORD 6)	63	60-64 1-03	BILEVEL MOED OA
WB-04 DSU REDURDART STATUS WORD 45 WB-36 UB-42 PUR CORV PRI VOLT MONITOR 46 WB-31 C/08-48 EXT OSC REC VOLT 49 WB-17 IM R106 RIU 06 TEMP 49 WB-31 TM-01 PUR SUPPLY I CURRENT 50 TM-02 TM-02 PUR SUPPLY I CURRENT 50 TM-02 TM-03 PUR SUPPLY I CURRENT 50 TM-02 TM-04 PUR SUPPLY I CURRENT 50 TM-02 TM-05 PUR SUPPLY I CURRENT 50 TM-02 TM-07 PUR SUPPLY I CURRENT 51 TM-02 TM-08 PUR SUPPLY I CURRENT 51 TM-02 TM-09 PUR SUPPLY I CURRENT 51 TM-02 TM-09 PUR SUPPLY I CURRENT 51 TM-02 TM-09 AT RCWR RED ELEV REDOR 55 WB-54 UB-55 AT RCWR RED ELEV REDOR 50 WB-54 UB-57 AT RCWR RED ELEV REDOR 50 WB-54 UB-57 AT RCWR RED ELEV REDOR <td></td> <td>15</td> <td>שנומה נמש שנוש</td> <td>**</td> <td>5</td> <td>משא לש מעמו בשים</td>		15	שנומה נמש שנוש	**	5	משא לש מעמו בשים
46 WB-42 PWR CORV P2I VOLT HOHITOR 47 WD-31 C/OR-48 EXT OSC REC VOLT 48 WB-17 IM RIU6 RIU O6 TEMP 49 WB-58 TM-01 PWR SUPPLY I CURRENT 50 TW-01 TM-03 PWR SUPPLY I CURRENT 50 TW-01 TM-04 PWR SUPPLY I CURRENT 50 TW-02 TM-05 +8V TW-04 50 TW-02 TM-05 +8V TW-04 51 TW-02 TM-05 +8V TW-05 54 ESAH-12 ESAA-12 ESA-2 SERSOR 54 ESAH-12 WB-54 AT RCVR RED AZIM ERROR 56 WB-54 WB-56 AT RCVR RED ELEV ERROR 57 WB-55 WB-57 AT RCVR RED ELEV ERROR 50 WB-54		200		; ;	2 5	THE STORE WINDS AND
VB-42 PHR CORV PRI VOLT MONITOR 47 UB-31 C/08-48 EXT OSC REG VOLT 48 WB-17 IM RIU6 RIU 06 TEMP 49 WB-58 TM-01 PHR SUPPLY I CURRENT 50 TM-01 TM-02 PWR SUPPLY I CURRENT 50 TM-02 TM-03 +By TM-02 TM-02 TM-04 +By TM-02 TM-02 TM-05 +By TM-03 TM-03 MB-34 AT RCWR RED AZIM ERROR 56 MB-36 MB-54 AT RCWR RED SIC STRENCTH 59 WB-53 WB-53 AT RCWR RED SIC STRENCTH 60 WB-53 WB-36 CDA ELEV NOTOR TEMP PRIME <td></td> <td>5</td> <td>DAD BELLDING STATES WANTED</td> <td>C 37</td> <td></td> <td>and odesa recognism tens</td>		5	DAD BELLDING STATES WANTED	C 37		and odesa recognism tens
C		•		<u>.</u>	;	
C/0H-68 EXT OSC REG VOLT 48 48-17 LM R106 RIU 06 TEMP 49 48-58 TM-01 PVB SUPPLY I CURRENT 50 TM-01 TM-02 PVB SUPPLY I CURRENT 50 TM-01 TM-05 PB SUPPLY I CURRENT 50 TM-01 TM-05 PB SUPPLY I CURRENT 52 TM-02 TM-05 PB SUPPLY I CURRENT 52 TM-03 TM-05 PB SUPPLY I CURRENT 53 TM-05 MB-54 AT RCVR RED AZIM ERROR 55 MB-55 WB-55 AT RCVR RED ELEV ERROR 55 WB-55 WB-56 AT RCVR RED ELEV ERROR 56 WB-55 WB-57 AT RCVR RED SIG STRENGTH 59 WB-55 WB-53 AT RCVR RED SIG STRENGTH 60 WB-51 WB-53 AT RCVR RED SIG STRENGTH 60 WB-53 WB-54 AT RCVR RED SIG STRENGTH 60 WB-53 WB-55 AT RCVR RED SIG STRENGTH 60 WB-53 <		76-9M	PER CORV FRI FOLT MONITOR	3	1	WITH KID FREED SOURCE TENE
1M R106 R1U 06 TEMP 49 WB-58 1M-01 PHZ SUPPLY I CURRENT 50 TM-01 TM-02 PWZ SUPPLY I CURRENT 50 TM-02 TM-03 +8W SUPPLY I CURRENT 50 TM-02 TM-05 +8W SUPPLY I CURRENT 51 TM-02 TM-05 +8W SUPPLY I CURRENT 53 TM-05 MB-54 AT RCVR RED AZIM ERROR 54 LSAH-12 MB-55 AT RCVR RED AZIM ERROR 55 WB-54 WB-56 AT RCVR RED ELEV ERROR 56 WB-55 WB-56 AT RCVR RED ELEV ERROR 57 WB-55 WB-57 AT RCVR RED SIG STREKGTH 59 WB-55 WB-53 AT RCVR RED SIG STREKGTH 59 WB-55 WB-54 AT RCVR RED SIG STREKGTH 60 WB-55 WB-57 AT RCVR RED SIG STREKGTH 60 WB-53 WB-58 GDA ELEV KOTOR TEMP PRIME 61 WB-53 WB-38 GDA ELEV ROTOR TEMP PRIME 63 WB-33		C/08-48	EXT OSC REG VOLT	8	412-17	DEC KO-TATA BASEPLAIK TEMP PRI
TM-01 P45 SUPPLY I CURRENT 50 TM-01 TM-02 P48 SUPPLY I CURRENT 51 TM-02 TM-05 +87 52 TM-05 TM-13 CDVU +6V 52 TM-05 TM-13 CDVU +6V 53 TM-12 ESA-2 SERSOR STATUS 53 TM-12 H9-54 AT RCYR REI AZIM ERROR 55 WB-54 H9-55 AT RCYR RED AZIM ERROR 56 H9-55 WB-56 AT RCYR RED BLEV ERROR 56 H9-55 WB-57 AT RCYR RED SIG STRENGTH 59 WB-55 WB-57 AT RCYR RED SIG STRENGTH 59 WB-55 WB-57 AT RCYR RED SIG STRENGTH 60 WB-55 WB-58 GDA ELRY NOTOR TEMP PRIME 61 WB-09 WB-38 GDA ELRY NOTOR TEMP PRIME 63 WB-33		IM RIU6	110 06 TEMP	64	82-88	BILLEVEL WORD OR
TH-02 FWB SUPPLT 2 CURREST 51 TH-02 TM-05 +8V TM-05 +8V TM-13 CDVU +6V 52 TM-05 FM-12 CSAP-12 SCHSOR STATUS 53 TM-12 ESAP-12 ESAP-12 SCHSOR STATUS 54 ESAP-12 HB-54 AT RCVR RED AZHE ERROR 56 HB-54 WB-55 AT RCVR RED ELEV ERROR 56 HB-55 WB-56 AT RCVR RED ELEV ERROR 57 WB-55 WB-57 AT RCVR RED SIG STRENGTH 59 WB-57 WB-53 AT RCVR RED SIG STRENGTH 60 WB-53 WB-57 AT RCVR RED SIG STRENGTH 60 WB-53 WB-57 AT RCVR RED SIG STRENGTH 61 WB-53 WB-58 GDA ELEV NOTOR TEMP PRIME 63 WB-53		10-E	PER SUPPLY 1 CURRENT	20	14-01 14-01	PER SUPPLY 1 CURRENT
TH-O5 +8V TH-O5 +8V TH-L3 CDVU +6V ESAH-12 ESA-2 SENSOR STATUS 53 TH-O5 H9-54 AT RCVR RED AZIM ERROR 56 LSAH-12 H9-54 AT RCVR RED AZIM ERROR 55 WB-54 WB-55 AT RCVR RED AZIM ERROR 56 WB-55 WB-56 AT RCVR RED ELEV ERROR 57 WB-55 WB-57 AT RCVR RED SIG STERKGTH 59 WB-57 WB-53 AT RCVR RED SIG STERKGTH 59 WB-51 WB-53 AT RCVR RED SIG STERKGTH 60 WB-53 WB-53 AT RCVR RED SIG STERKGTH 60 WB-53 WB-53 AT RCVR RED SIG STERKGTH 60 WB-53 WB-53 CDA ELEV NOTOR TEMP PRIME 63 WB-33		TH-02	PLE SUPPLY 2 CUREENT	25	TH-02	PLE SUPPLY 2 CURRENT
TH-23 CDVU +8V ESAP-12 ESA-2 SERSOR STATUS B-54 AT RCVR PRI AZIM ERROR WB-55 AT RCVR RED AZIM ERROR WB-55 AT RCVR RED ELEV ERROR WB-56 AT RCVR RED ELEV ERROR WB-57 AT RCVR PRI SIG STREKGTH WB-52 AT RCVR RED SIG STREKGTH WB-53 AT RCVR RED SIG STREKGTH WB-54 AT RCVR RED SIG STREKGTH WB-55 AT RCVR RED SIG STREKGTH WB-57 AT RCVR RED SIG STREKGTH WB-58 AT RCVR RED SIG STREKGTH WB-59 WB-59 WB-50 WB-59 WB-50 WB-50 WB-50 W		20-70	A84	: 5	Š	D8+
ESAM-12 ESA-2 SENSOR STATUS HB-54 AT RUCH RELOR WB-55 AT RUCH REBOR WB-55 AT RUCH RED AZIM ERROR WB-56 AT RUCH RED ELEV ERROR WB-57 AT RUCH RED ELEV ERROR WB-57 AT RUCH RED SIG STRENGTH WB-58 AT RUCH RED SIG STRENGTH WB-59 AT RUCH RED SIG STRENGTH WB-50 AT RUCH RED SIG STRENGTH WB-51 WB-52 WB-53 AT RUCH RED PRIME 60 WB-53 WB-53 WB-53			Com: + 9m	3 5		101
## ## ## ## ## ## ## ## ## ## ## ## ##		C7-H1	כחינו דפי	2 :	14-43	CONT. TOO
WB-54 AT RCVR PRI AZIM ERROR 55 WB-54 WB-55 AT RCVR RED AZIM ERROR 56 WB-55 WB-56 AT RCVR RED ELEV ERROR 57 WB-55 WB-57 AT RCVR RED ELEV ERROR 58 WB-57 WB-52 AT RCVR RED SIG STRENGTH 59 WB-57 WB-53 AT RCVR RED SIG STRENGTH 60 WB-53 WB-53 AT RCVR RED SIG STRENGTH 61 WB-53 WB-54 CDA ELEV NOTOR TEMP PRIME 63 WB-33		ESAM-12	ESA-2 SEMSOR STATUS	Š	ESAH-12	ESA-2 SEUSOR STATUS
WB-55 AT RCVR RED AZIM ERROR 56 HB-55 UB-56 AT RCVR PRI ELEV ERROR 57 WB-55 UB-57 AT RCVR RED ELEV ERROR 58 WB-57 UB-52 AT RCVR RED SIG STREKCTH 59 WB-52 WB-53 AT RCVR RED SIG STREKCTH 60 WB-53 WB-07 BILEVEL KORD 63 61 WB-09 WB-38 CDA ELEV KOTOR TEMP PRIME 63 WB-33		49-S4	AT RCVR PRI AZIM ERROR	55	3-2	AT ACUB PAI AZIM BRROR
WB-56 AT RCVR RIL BLEV ERROR 57 WB-56 WB-57 AT RCVR RIL BLEV ERROR 58 WB-57 WB-52 AT RCVR RIL STRENGTH 59 WB-52 WB-53 AT RCVR RED SIG STRENGTH 60 WB-53 WB-07 BILEVEL MORD 03 61 WB-09 62 WB-38 WB-38 CDA ELRY NOTOR TEMP PRIME 63 WB-33		25-62	AT DOWN AGEN ATTM PROCES	35	ş	AT BOVE BED AZIM REROR
WB-50 AT MCVR FELX ERROR 55 WB-50 WB-57 AT ACVR RED SIG STRENGTH 59 WB-51 WB-53 AT ACVR RED SIG STRENGTH 60 WB-53 WB-53 WB-53 WB-38 CDA ELRY MOTOR TEMP PRINE 63 WB-33 WB-33		- P	A TOTAL TOTAL CONTROL	2 5	75 44	ì
WB-57 AT RCYR MED ELEV ERROR WB-52 AT RCYR PRING WB-53 AT RCYR RED SIG STRENGTH WB-07 BILEVEL HORD 63 WB-38 GDA ELEV ROTOR TEMP PRINE 63 WB-33		0CQA	AL HUNK FAI ELEV ENIUM	76		rat Elecv
UB-52 AT RCVR PRI SIG STRENGTH 59 UB-52 UB-53 AT RCVR RED SIG STRENGTH 60 UB-53 UB-07 BILEVEL NORD 03 61 UB-09 UB-36 CDA ELRY NOTOR TEMP PRIME 63 UB-33		EB-57	AT RCVR RED RIEV REROR	28	13-21	
WB-53 AT RCVR RED SIG STRENGTH 60 WB-53 WB-07 BILEVEL MORD 03 61 WB-09 62 62 WB-38 CDA ELRY MOTOR TEMP PRIME 63 WB-33		WB-52	AT ACVR PRI SIG STREEGTH	88	WB-52	Par
WB-07 BILEVEL KORD C3 62 62 62 63 WB-33		47B-53	AT RCVE RED SIG STREEGTH	09	WB-53	200
WB-38 CDA ELRY NOTOR TEMP PRIME 63 WB-33		FB-07	STIFUEL BORD C3	19	60-65	STLEVEL SORD OS
WB-38 CDA ELRY NOTOR TEMP PRIME 63 WB-33				. 63		
WB-35 CIA ELEV ROTOR TEMP FRINK					;	the state of the s
		WB-38	COM ELEV KOTOR TEMP PRIME	6	W6-33	WEN-I FAREL (FSU/DSU) TERP
			-			

Table 2-22. Subcommutator 6 - Minor Prame Word 99

ORIGINAL PAGE IS OF POOR QUALITY

Description	RPC SPARE TEMP 1 GDE RAI SERIAL OUTPUT (WORD 4) RPC RU TWIA BASEPLATE TEMP RED GDE REDUND SERIAL OUTPUT (WORD 4) RPC AUTOTRACK FIREQ SOURCE TEMP WEN TATAL BASEPLATE TEMP FRI ESA-1 SENSOR STATUS BILEVEL WORD 705 WEN AT COVER TEMP WHN X PREQ SOURCE TEMP RIU 08 TEMP AT RCVE PRI AZIM ERROR AT RCVE PRI AZIM ERROR AT RCVE REI REVE ZREOR AT RCVE REI SIES STRENCTH AT RCVE RED SIES STRENCTH
User ID	WB-16 WB-17 WB-01 WB-17 WB-02 WB-18 WB-18 WB-19 WB-25 WB-25 WB-25 WB-25 WB-26 WB-25 WB-26 WB-36 WB-56 WB-57 WB-56
Minor Frase Number	98 99 98 99 98 99 99 99 99 99 99 99 99 9
Description	GD4 AZIM KOTOR TEMP PRIME GDE PRI SERIAL OUTPUT (WORD 4) RPC KU UPCONVEPTER TEMP GDE REDUMD SCRIAL OUTPUT (WORD 4) RPC KU DIPLEKER TEMP RPC KU DIPLEKER TEMP RPC KUTOTRACK COMBIGER ASSY TEMP RSA-1 SCRSUG STATUS X TWTA REDUMD BUS CURRENT X TWTA REDUMD BUS CURRENT X TWTA REDUMD BELIX CURRENT X TWTA REDUMD BELIX CURRENT X TWTA REDUMD BELIX CURRENT DILEYEL WORD O6 RPC RAMEL (WRAR PEED) TEMP WHA GDE TEMP PWR SUPPLY 1 CURRENT PWR SUPPLY 1 CURRENT PWR SUPPLY 2 CURRENT +8y CDVU +8V ESA-2 SENSOR STATUS AT PCVR REU AZIM ERROR AT RCVR REU AZIM ERROR AT RCVR RED ELEV SRROR AT RCVR RED SIG STRENCTH GDA AZIM MOTOR TEMP REDUND GDA AZIM MOTOR TEMP REDUND
User ID	KB-13 KB-01 KB-01 KB-02 KB-02 KB-12 KB-12 KB-54 KB-48 KB-48 KB-48 KB-48 KB-49 KB-10 KB-43 KB-55 KB
Minor Frame Number	2-112

Table 2-21. Subcosmutator 6 - Minor Plans Word 99

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SMPL RATE indicates the number of snaples per major froms. Only the first MTK LOC is given for functions sampled note than once per major frame. Subsequent samples are in evenly spaced (128/SMPL RATE) rows in the column from the location given.

00 through 127 columns by 00 through 127 rows. H/A indicates not assigned in telemetry matrix.

200M - M

8 indicates MISSION mode format only 1 indicates ENGINEERING mode format only Blank indicates both MISSION and ENGINEERING mode formats

ADDRESS

Channelo are identified 60 through 63 for RIU telesetry gates, 64 through 127 for gates 00 through 63 of the first EU associated with a RIU, and 128 through 191 for gates 00 through 63 of the second RU associated with

Tables 2-15 through 2-41 are derived from drawing number 47J249400AR including Alteration Motices 1 through 12. Refer to future Alteration Notices from Print Control to update these tables. •

Bilevel digital word; I is first seaning; 0 is second asening. 7:

Example:

C/DH-25 Xpndr B Xatr ON/OFV 1-Xpndr B Xatr OH O-Xpndr B Xatr OFF

5--0 through B--7 indicate bit definition for each bit of a bilevel digital Word (Bit O is MSB).

5--0 through S--7 indicate bit definition for each bit of a serial digital Word (Bit 0 is MSB). SER or SO-7 indicate serial digital words where bit definition is unknown or not required

PASS indicates a passive enalog function requiring a 1 mA current source from a RIU.

ALOG indicatos an active analog function not requiring a 1 mA source.

MTX LOC - Matrix Location

Table 2-23. Telemetry List Notes

SCHL TYPE

NOTES:

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EC.DH

Table 2-24

COMMUNICATIONS AND DATA HANDLING SUBSYSTEM

Table 2-24. C4DH Telemetry List

Andread and the second second

USER ID	ACRONYM	TLM PUNCTION DESCRIPTION,	21.12	COL, ROM	KATE	×	RIU-CH
10-HQ/3	CHPSYNC	PRAME SYNC WORD 00 (11111010)	80-7	0,00	b		8
		FRAME SYNC WORD OI (11110011)	2-09	0,10	· ¥ .		8
C/08-02	BOMA IJJ	STRAME STRUMORD UZ (DUIGODOU)	7-05	0,70	0.6		3 2
C/DH-03	CCLETSB	S/C CLOCK (8 MIDDLE BITS)	50-7	96.0	128		01-07
C/DH-04	CCLKLSB	S/C CLOCK (8 LSB), 1 BIT-1.024 SECONDS	20-7	64,0	128		8
C/DH-05	CPRINCHT	MINOR PRASE COUNTER (0-255)	20-7	65,0	128		8
C/DH-06	CCHDCNT	CHD COUNTER, SELECTED CU (0-255)	20-7	0,99	128		8
C/DH-07	CDALMOD	DHELL MODE ON/OFF	9	67,0	128		8
	CONTCHN	DAELL MODZ CHANNEL (0-127)	31-7	0,79	128		8
C/DH-08	CBITRAT	TELEMETRY BIT RATE	30- 2	03,0	128		8
		-					
		7					
		•					
		011 8 KBPS					
		100 16 KBPS					
		110 64 KBFS					
		_					
	CPORMAT	¥	83-4	03.0	128		8
		00 CU FLEX PORMAT		•	<u>;</u>		:
		01 ENC'G ROM PORMAT					
		11 UBC FLEX FORMAT					
	CONCUID	CU B/CU A	83	03,0	128		8
	CRTCDMP	DATA REAL TIME/OBC DUMP	86	03,0	128		5
	CCHAREJ	CU DCDR CH A REJECT/NO REJECT	S-7	03,0	128		8
C/DH-09	CCUAPLX	CU A PLEX PORMAT LOAD/VERIPY	20-7	97,82			8
C/DH-10	CCUBFLX	CU B FLEX FORMAT LOAD/VERIFY	20-7	98,82	-		8
C/DH-11	CSCMBCT	STANDBY CU CCAMAND COUNTER (0-255)	20-7	96,82			01-05
C/DH-12	CADMPID	OBC DUMP MEHORY BANK ID, STINT A	S0-3	98,83	-		01-03
		0000 NEM BANK 15					
		0001 NEM BANK 14					
		HEM BANK					
		MEM BANK					
		HEM BANK					
		MEM BASK 1					
		HEM DATTY					
		즆					
		HEM BANK					
		MAN WALL					

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USER ID	ACROHYM	27	TLM PUBCTION DESCRIPTION	DE SCR	117108		77 FE	COL, ROW	EATE	*	ADMESS RIU-CE	
	слония	1011 1100 1100 11101 11110 11111 11111 1100 00	HZM BAHK 4 HZM BANK 3 HZM BANK 2 HZM BANK 1 HZM BAKK 1 HZM BAKK 0 DUMP, STIMT A SOFTWARE DUMP HAKDWARE DUMP	本 英 英 英 英 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	β ₁ β ₂		\$- \$ 8	98,83	-			
С/рн-13	CBDMPID	11 KG ROT USED 00C0 NUPP 00C0 NUPP 00C0 NUPP 00C1 NUPP 00C1 NUPP 00C1 NUPP 01C1 NUPP 01C1 NUPP 01C1 NUPP 10C2 NUPP 10C2 NUPP 10C2 NUPP 10C3 NUPP 10C4 NUPP 10C6 NUPP 10C7 NUPP 1	S C C C C C C C C C C C C C C C C C C C	CAORT BA EAORT BA BANK 14 BANK 11 BANK 11 BANK 11 BANK 10 BANK 10 BANK 10 BANK 7 BANK 7 BANK 6 BANK 7	KK 10,	8 THT 8	86-7 80-3	8 9 8 8 8			6 -10	
С/ОН-14	C B DY IF H S C PAMODE C PAMODE	1110 MZH 111: MZH 111: MZH 66 SGE 60 SGE 10 HAM 110 HOT 110 HOT 1000 MOI 1000 MOI 1100 MOI 1010 MOI 1010 MOI 1010 MOI 1010 MOI	HEAD BURE SOUTH BENEVA	TA O O O O O O O O O O O O O O O O O O O	ANT 1 AIR 0 STIME B ARR BURP ARR DURP ARR ARD OSC C = 8/T ARD D/S C = 8/T ARD EXT B = 8/T TO STOR F = 8/T TO STOR F = 8/T TO STOR	I DO IN THE BEAUTH BEAUTH BY THE BURD STATUS INTO STORE BUT TO STORE BUT AND EXT TO STORE EXT TO STORE EXT TO STORE BUT TO	88 6-3 80-3	86 86 86 86 96 96 97			00-10	

Table 2-24. C60R Telemetry List

ORIGINAL PAGE IS OF POOR QUALITY

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O			0100	D - R/T AND EXT TO					
110			0107	E 41					
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10 ON 11 NOT USED 11 NOT USED 12 ON 12 ON 12 ON 13 ON 14 ON 14 ON 15 ON			6	NOT USED					
11 NOT USED			2	NO					
CPBHDLM PHP B HAIDLINE OUTPUT STATUS S6-7 97,78 1 00 HAIDLINE OUTPUTS OFF 1 05 CRADLINE 1 06 CRADLINE 1 07.7 07.7 08.7 08.7 09.7 08.7 09.7 08.7 09			11	NOT USED					
00 HANDLINE OUTPUTS OFP 01 OBC MEN TO HANDLINE 10 B/T TO HANDLINE 11 T/R TO HANDLINE CSTATOIO BILEVEL HORD DIO: 34,0 CKPARLE XPHDR A RCW LOCKED/UNLOCKED B—0 CKPARLE XPHDR A RCW LOCKED/UNLOCKED B—1 CKPBRAD XPHDR B RCC NODE TDRS/STDN B—2 CKPBRAD XPHDR B RCC NODE TDRS/STDN B—3 CKPBCLK XPHDR A CMD DET UNLOCKED/LOCKED B—4 CKPBCLK XPHDR B CMD DET UNLOCKED/LOCKED B—4 CKPBCLK XPHDR B CMD DET UNLOCKED/LOCKED B—5 CKPBCLK XPHDR B CMD DET UNLOCKED/LOCKED B—5 CKPBCLK XPHDR B CMD DET UNLOCKED/LOCKED B—5 34,0 128		CPBHDLM			26-7	97.78	-		
O1						•	,		
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1			; =	at to avoid the					
CSTATO10 BILEVEL WORD 010: 34,0 01-08 CXPARLK XPHUR A RCYB LOCKED/UNLOCKED B-0 34,0 128 CXPARHD XPHUR A RCYB LOCKED/UNLOCKED B-1 34,0 128 CXPBRLK XPHUR B RCVM LOCKED/UNLOCKED B-2 34,0 128 CXPBRLK XPHUR B RCC NODE TORS/STON B-3 34,0 128 CXPACLK XPHUR A CHD DET UNLOCKED/LOCKED B-4 34,0 128 CXPBCLK XPHUR B CHD DET UNLOCKED/LOCKED B-5 34,0 128			2 =	T/P TO HABILINE					
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XPHDR A REC MODE TDRS/STDN B—1 34,0 128 XPHDR B RCVN LOCKED/UHLOCKED B—2 34,0 128 XPHDR B REC MODE TDRS/STDN B—3 34,0 128 XPHDR A CMD DET UNLOCKED/LOCKED B—4 34,0 128 XPHDR B CMD DET UNLOCKED/LOCKED B—5 34,0 128		CKPARLE		A RCVR LOCKED/UNLOCKED	9	34.0	128		
XPHDR B RCVM LOCKED/UNLOCKED B2 34,0 128 XPHDR B REC MODE TDRS/STDN B3 34,0 128 XPHDR A CMD DET UNLOCKED/LOCKED B4 34,0 128 XPHDR B CMD DET UNLOCKED/LOCKED B5 34,0 128		CXPARMD	XPNDR			34.0	128		01-0
XPHDR B REC MODE TDRS/STDN B—3 34,0 128 XPHDR A CMD DET UNLOCKED/LOCKED B—4 34,0 128 XPHDR B CMD DET UNLOCKED/LOCKED E—5 34,0 128		CXPRRIK	XPNDA	B RCVD LOCKED/UNLOCKED	82	34.0	128		01-10
XPNDR A CMD DET UNLOCKED/LOCKED B6 34,0 128 XPNDR B CMD DET UNLOCKED/LOCKED B5 34,0 128		CYDRDAM	A DANS	a per mone thes/stan		34	128		וו-וס
XPNDR B CMD DET UNLOCKED/LOCKED B-4 34,0 128						2 6	2		10
AFRICA B CRU DEL UNCOCKEU CONTROL		CACACLA		A CHO DEL UNIOCKED/LOCKED	9 6	2 4	120		1110
		CAFBULA	Arieta Generalia	AFRICA B CAD DEL UNDOCAEU/LUCAEU	֝֞֞֞֝֞֞֝֞֞֜֞֝֞֜֞֝֓֞֜֞֞֜֞֞֜֞֞֜֞֞֜֞֞֜֞֞֞֜֞	2	077		

Table 2-24. C6DH Telemetry List

ORIGINAL PAGE IS OF POOR QUALITY

USER ID	ACRONYM	TLM PUNCTION DESCRIPTION	17.12	HON' TOO	RATE	N RIU-CH	8
	1 addition	STATE OF THE PARTY OF THE PARTY OF THE		0 16	900		
C/DH-17	CCOBRE	BILEVEL WORD 020:		0 1	071	01-16	.
	CKPASTD	XPNDR A REC MODE STON/DUAL	9-1	97,106	-	01-22	~
C/DH-18	CSTAT040	BILEVEL HORD 040:	•	96,103	1	01-32	~
	CCUANP	CU A ON/OPP	0	96,108	~	01-32	~
	CCUAHFN	CU A HARDLINE OFF/ON	B1	96,108	,	01-33	_
	CCUBRE	CU B OR/OFF	B2	96,108	-	01-34	
	CCUBHEN	CU B HARDLING OFF/ON	B3	96,108	-	01-35	
	CRPLYSA	REPLY LINE B/A	9 0	96,108	-	01-36	•
	CSUPVBA	SUPERVISORY LINE B/A	BS	96,108	-	01-37	_
	COSCINX	CU OSCILLATOR INTERNAL/EXTERNAL	9	96,108		01-38	•
	CRIUSBA	RIU O1 B ON/A ON	B7	96,108	_	01-39	•
C/DH-19	CSTAT050	BILEVEL WORD 050:		98,125		01-40	
	CPHPANP	PMP A ON/OFF	B-0	98,120	-	01-40	_
	CPACUBA	PMP A SELECT CU B/CU A	2-1	96,120	-	01-41	
	CPRTENC	PMP A R/T COMV ENC IN/OUT	B2	98,120		01-42	. ~
	SPASTBA	PMP A SELECT STINT B/STINT A	B3	98,120	-	01-43	_
	SPASTENC	PMP A STINT TAPE CONV ENC 1H/OUT	4	98,120	-4	01-44	•
	CPANIMX	PMP A SELECT RECORDER A/PCD	85	98,120	-	59-10	•
	CPARKAB	PMP A SELECT PCD B/A	9	95,120	-	9+-10	•
		ب		1			
		10 SELECT NOTE NO. 1					
	CHATENE	ATH ON MATE STANDRY 1 /000	7	061 80	_	74-10	
C/DH-20		BILEVEL MORD 060:		98,119	•	01-48	
	CPMPBNP	PMP B ON/OFF		98,119	1	01-48	
	CPBCUBA	PMP B SELECT CU B/CU A	B1	98,119	-	01-49	
	CPBSTEHC	PHP B R/T CONV ENC IN/OUT	6-2	98,119		01-50	_
	CPBSTBA	PROP B SELECT STINT B/STINT A	83	98,119		01-31	_
	CPBSTENC	PHP B STINT/TAPE CONV ENC IN/OUT	9	98,119	-	01-52	~4
	CPBNZMK	PMP B SELECT RECORDER B/PCD	BS	98,119	-	01-53	_
	CPBHIXAB	PMP B SELECT PCD 8/A	90	98,119	-	01-54	_
		35-6		•			
		TI SELECT REIK NO. 2			•	č	
C/BH-21	CLABAR	ATTEMPT HORD DIO (ASTRAP)/A/B(NUK)	Ì	26,117	-	01-10 01-10	•
	CYPAND	TOWNS A MOD THIRE HICH/I ON	B7	96 107	-	19-10	
		ALANCE OF THE PARTY COLD TONING			•		

Table 2-24. CaDH Telemetry List

ORIGINAL PAGE IS OF POOR QUALITY

USER ID	ACROHTM	TLM PUNCTION DESCRIPTION	TTPE	HTX LOC COL, RGW	SAPI. Rate	×	Address RIU-Ch
C/DB-22	CSTAT110	BILEYEL WORD 110:		97,107			01-72
	CXMTARD	XPHOR A XMTR PRI PHR EHA/DISA	9	701,76	-	_	01-72
	CXMTBED	APHOR B ENTR PRI PHR ERA/DISA	<u>-</u> -	97,107		-	01-73
	CHILLED	HEATER 1 Elia/Disa	B 2	97,107	-		01-74
	CHTR 2ED	HEATER 2 ELIA/DISA	8-3	97,107	-		01-75
	CXAMPTH	XPRDA A TDAS MULTIPATH/RO MULTIPATH	90	97,107	-4	_	01-76
	CXEMPTH	APADE B TOIS MULTIPATH/HO MULTIPATH	B5	97,107	-4	-	01-77
	CXPAXHT	XPEDS A XMIT MODE STOR/TERS	9	97,107	,		01-78
	CXPBDET	XPRIDA A DETECTOR 1 KBPS/125 BPS	1-1	97, 107	-	_	01-10
C/DB-23	CSTAT130	BILZVEL 402D 130:		97,103	1	_	01-88
	CCUADAP	STACC CU A OBC DUMP 32 KBPS/1 KBPS		97,108	-4	_	16-10
	· CXPARAS	APHDA A RCVR ACQUISITION STATE (MSB)	9	97,100	-	_	01-92
		APHDA A RAS	65	97,108			01-93
		XPHDA A RAS	98	97,108	-	_	01-94
			11	97,108	-	_	01-95
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		CASH TREE HSPD					
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	CANTAMP		֭֡֞֞֞֞֟֞֝֟֝֟֟֝֟	30,100	-	-	/6-10
	CXPAOSC		B2	26,106	-		85-10
	CXPBXHT		Ţ	96,106	-	-	01-99
	CAUTAXMA	<	1	96,106	~	-	001-10
	CAUTAXMB	XPRIDG B XMTR AUTO OR ENA/DISA	25	96,106	-	-	101-10
	CXPBP23I	XPUDA 3 PH CODE I CHAN OFF/ON	9 0	96,105	•	_	01-102
	CXPBPRO	XPIDE B PR CODE O CHAH OFP/ON	P7	96.106			01-103
C/DH-25	CSTAT1 SO	DILEVEL HOLD 150:		97,105		_	01-104
	CXPBDZT	MPHOR B DETECTOR 1 KBPS/125 RPS	9	97, 105	-	•	901-10
	CXPAPNI	XPHDR A PR CODZ I CHAM OFF/OM		97, 105		_	01-10
	CHOADA	ADRUS A DEI CORS O CUAM ADACOM		801.10		-	901-10
	CXPAPINO	XPNUK A FE CODE Q CHAM OFF/OR	79	CD1./8	=	_	7-10

Table 2-24. C4DH Telemetry List

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ADDRESS RIV-CE 01-119 01-120 01-122 01-123 01-124 01-125 01-111 01-112 01-112 01-113 01-115 011-1C 01-118 01-10 01-10 01-121 01-21 01-16 01-17 01-20 01-27 01-30 01-30 01-19 × SMPL 97,103 97,103 97,103 97,103 97,103 97,103 98,103 98,103 98,103 98,07 98,07 98,07 98,07 98,07 98,07 98,09 98,09 98,10 98,110 98,110 98,119 98,31 96,81 96,81 97,81 HITT LOC COL, ROSS SCIIL XPHDA B STDH RANGING ON/OFF XFNDA B XMTR ON/OFF XFNDA B OSC AUTO TLANSFRA DISA/ENA XFNDA B REC HODE STDH/DUAL XFNDA B WOD INDEX FICH/LOW BILEYEL WOAD 160: STACC CU D OGC DUMP 32 KBPS/1 KBPS AFNDR A ACC-STDH MODE AFNDR A ACC-TOMSS WODE AFNDR B ACC-TOMSS WODE FINDR B ACC-TOMSS WODE FINDR B ACC-TOMSS WODE FINDR B ACC-TOMS WODE FINDR B ACC-TOMS WODE FINDR B SELECT MAX/RCDR B CONFUTER FAILURE DET A ENAADISA STACC STINT B, NSSC B OB/OFF CORPUTER FAILURE DET B ENA/DISA PWB SUPPLY FOR MEN 1,3,5,7 B/A PWB SUPPLY FOR MEN 0,2,4,6 B/A PWB SUPPLY FOR MEN 0,2,4,6 B/A NEM 1,5 ENA/DISA NEM 0,4 ENA/DISA NEM 0,5-6 NONTICUBATION BIT B5-6 NONTICUBATION BIT CONTICUBATION 1 10 CONTICUBATION 1 11 CONFICURATION 1 MODULE TEMP BETWEEN APPEARS ASB STACC STINT A, NSSC A ON/OFF ETU OL B TEMP BIU OL A/B INTERSPACE TEMP TLM PUNCTION DESCRIPTION STACC CU A TEMP STACC CU B TEMP PCU TEMP RIU OL A TEMP STINT A TEMP STINT B TEMP PAP TEMP CXPBHOD CSTAT160 CSTOBCA CPHEM13 CPHEM02 CSTAT170 CCUBDMP CSAGCKPA CTAGCKPB CSAGCKPB CTAGCKPB CCFDAED CSTOBCB CCFUBED CHEM1ED CHEM2ED CHEMOED C26VRPS CRPSHC CTRIUA CTRIUB CTRIUAB CTSINTA CXPBOSC CTSTNTB CPRIPTINE ACRONYM CXPBBHC CXMTBHP CKZH32D CPMPDIB CCUATMP CCUBTMP CPCUTMP C/DH-29 C/DH-30 C/DH-31 C/DH-31 C/DH-33 C/DH-33 C/DH-34 C/DH-35 C/DH-35 3 C/DB-27 USER 2-120

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CTEMORA MENDR AND TEMP PASS 97,69 1 CTEMORE EXT OSC ULATO GASS TEMP PASS 96,16 1 CTEMORER EXT OSC OVEN TEMP PASS 96,16 1 CUNCUR EXT OSC OVEN TEMP PASS 97,16 1 CUNCATA RETURN ACC LEVEL ALLOG 99,16 1 CACKAR MENDR A RP RETURNE ALLOG 99,16 1 CACKAR MENDR A RP RETURNE POWER ALLOG 99,10 4 CKPARD THING A RP RETURNE POWER ALLOG 99,10 4 CKPARD THING A RP RETURNE ALLOG 96,14 4 CKCARE THING A RP RETURNE ALLOG 96,14 4 CKCARE THING B RP FORMAD POWER ALLOG 97,24 4 CCCOCK S/C CLOCK ALCORD POWER ALLOG 87,0 4 ALLOG 86,0 4 ALLOG 66,0 4 ALLOG 66,0 4 ALLOG 64,0	CTEMORA MENDR AND TEMP PASS 97,69 11 CTEMORE EXT OSC LLATOR CASS TEMP PASS 97,16 11 CTATOVER EXT OSC OVER TEMP PASS 97,16 11 CUNGUE EXT OSC OVER TEMP PASS 97,16 11 CUNGUE EXT OSC OVER VOLTAGE ALDC 99,16 11 CUNGUE EXT OSC DE VOLTAGE BY ALDC 99,16 11 COUNCIS 4-28 V DIREC BUS ALDC 99,16 11 CACCYAR MENDR A GP FORMAD POWER ALDC 98,107 CTARRY MENDR A RP REFLECTED POWER ALDC 96,24 CACCYAR THURS A RP CORAGE POWER ALDC 97,24 CACCYAR THURS B RP CORAGE POWER ALDC 97,24 CACCOCK 5/C CLOCK ALDC POWER ALDC 66,0 ALDC 66,0 ALDC 66,0	CTEMORA MENDR AND TEMP PASS 97,69 11 CTEMORE EXT OSC ULLATOR CASS TEMP PASS 97,16 11 CUNCUR EXT OSC OVEN TEMP PASS 97,16 11 CANARD MENDR AND LEVEL AND 99,10 11 CANARD MENDR AND REPLECTED POWER ALOC 99,10 11 CANARD MENDR AND REPLECTED POWER ALOC 96,24 4 CANARD MENDR AND REPLECTED POWER ALOC 97,23 4 CANARD MENDR BAR PORTAGE ALOC 97,24 4 CANARD MENDR BAR REPLECTED POWER ALOC 97,24 4 CANARD MENDR BAR PORTAGE ALOC 97,24 4 CANARD MEND	/ 0H-45 / DH-45 / DH-47 / DH-47 / DH-49 / OH-50 / DH-51 / DH-51 / DH-53	CTEPBPA CTEXOSC CTXOVEN CVXOVEN CVEXOSC CUNGC28	APNDR B POS EXT OSCILL/ EXT OSC OWE EXT OSC OWE EXT OSC OWE FYINDR A RA APNDR A RA APNDR A RA APNDR A RA APNDR B RA KPNDR B RA S/C CLOCK	PASS PASS PASS PASS ALOC ALOC ALOC ALOC ALOC ALOC ALOC ALOC	97,69 97,16 98,16 98,16 98,10 98,24 97,24 97,24	ਜ ਜ ਜ ਜ ਜ ਜ ਜ ਵਾ ਵਾ ਵਾ ਵਾ ਵਾ ਵ	01-23 01-89 01-89 01-83 01-52 01-53 01-50 01-60
CTEROSC EXT OSCILLATOR CASR TEMP PASS 96,16 11 CTXOVER EXT OSC OVER TEMP PASS 97,16 11 CVEXOSC EXT OSC OVER TEMP PAGE CVEXOSC EXT OSC OVER PAGE CVEXOSC EXT OSC OVER PAGE CVEXOSC EXT OSC OVER PAGE CACCAR A FINISH A PAGE CXPARD EXPINE A RP FORMAD POWER PALOC 96,10 1 CXPARD EXPINE B RP FORMAD POWER PALOC 97,23 4 CXPARD EXPINE B RP FORMAD POWER PALOC 87,0 CXCOCK S/C CLOCK EXCLETED POWER PALOC 87,0 ALOC 87,0 ALOC 64,0	CTEORGE EXT OSCILLATOR CASE TEMP PASS 96,16 11 CTEORGE EXT OSC OVEN TEMP PASS 97,16 11 CTEORGE EXT OSC OVEN TEMP PAGE ALCO 99,16 11 CURCOS EXT OSC CEV VOLTAGE ALCO 99,16 11 CANCEY NEW BY A PORTAGE POWER ALCO 99,16 11 CANCEY PERRA A R.P. FORLATOR POWER ALCO 99,16 11 CANCEY PERRA A R.P. FORLATOR POWER ALCO 99,10 11 CANCEY PERRA A R.P. FORLATOR POWER ALCO 99,13 14 CANCEY PERRA B R.P. FORLATOR POWER ALCO 99,13 14 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY STORM B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY STORM B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA B R.P. FORLATOR POWER ALCO 97,13 4 CANCEY PERRA R.P. FORLATOR POWER PERRA R.P. FORLATOR POWE	CTULATOR CASE TRAP PASS 96,16 11 CTULATOR EXT OSC UVEN TRAP PASS 97,16 11 CTULATOR EXT OSC OVEN TRAP PAGE ALLO CVEXOSC EXT OSC OVEN TRAP PAGE ALLO CVEXOSC EXT OSC LEVEL CACCATA XTHOR A DAY CLEVEL CACCATA XTHOR A DAY COLAVEL CACCATA XTHOR A DAY COLAVEL CACCATA XTHOR A DAY COLAVEL CACCATA XTHOR A DAY CALEVEL CACCATA XTHOR A DAY CALEVEL CACCATA XTHOR B ACC LEVEL CACCATA XTHOR B ACCATA XT	/ DH-45 / DH-46 / DH-67 / DH-68 / DH-69 / DH-51 / DH-51 / DH-51	CTEXOSC CTXOVER CVXOVER CVEXOSC CUNGC28 CACCXPA	EXT OSCILLA EXT OSC OVE	PASS PASS ALOC ALOC ALOC ALOC ALOC ALOC ALOC ALOC	96,16 97,16 98,16 98,16 96,29 96,24 97,24 97,24	M M M M M M M M M M M M M M M M M M M	01-69 01-88 01-63 01-63 01-56 01-58 01-59 01-60
CUNCOR EXT OSC OFFN TEMP ALOS 97,16 11 CUNCOS EXT OSC VEW VOLTAGE ALOS 99,16 11 CUNCOS EXT OSC XEC VOLTAGE ALOS 99,16 11 CUNCOS A 428 V DIREC BUS ALOS 99,10 11 CAGCAPA XFIDE A ACC LEVEL ALOS 99,10 11 CXFARV XFIDE A RF RETLECTED FOVER ALOS 96,13 4 CACCAPA XFIDE A RF RETLECTED FOVER ALOS 95,10 4 CACCAPA XFIDE B RF PERILECTED FOVER ALOS 95,10 4 CXFARV XFIDE B RF PERILECTED FOVER ALOS 95,10 4 CXFARV XFIDE B RF PERILECTED FOVER ALOS 95,10 4 CCLOCK S/C CLOCK ALOS 66,0 ALOS 95,10 4 ALOS 95,10 4 ALOS 96,10 4	CUNDER EXT OSC OWEN TEMP ALOG 99,16 1 CUNDERZO EXT OSC CHEN VOLTAGE ALOG 99,16 1 CUNECZO EXT OSC CHEN TEMP ALOG 99,16 1 CACCARA XFURD A ACC LEVEL ALOG 99,107 1 CACCARA XFURD A RP REPLECTED FOWER ALOG 96,13 4 CACCARP XFURD B ACC LEVEL ALOG 97,14 4 ALOG 96,0	CUNCORN EXT OSC OVEN TRAF CUNROZS CONTROL CON	/ DH-46 / DH-47 / DH-48 / DH-49 / DH-51 / DH-51 / DH-51	CUXOVER CUXOVER CVEXOSC CUNEC28 CACCXPA	EXT OSC OVE EXT GSC OVE EXT OSC :EX +28 V UNEX XPHDR A AC XPHDR A B RP XPHDR B AC XPHDR B RP XPHDR B RP XPHDR B RP XPHDR B RP XPHDR B RP	PASS ALOG ALOG ALOG ALOG ALOG ALOG ALOG ALOG	97,16 98,16 98,16 96,16 96,23 96,24 97,24 97,24	m m m m d d d d d d d	01-88 01-83 01-82 01-82 01-53 01-53 01-59
CUXDUER EXT OSC OVER VOLTAGE CUYZOSC EXT OSC 2. EXT OULTAGE ALOC 99, 16 1 ALOC 99, 16 1 CLUCCZ AX XPHOR A ACC LEVEL CACKPA XPHOR A ACC LEVEL CACKPA XPHOR A ACC LEVEL CACKPE XPHOR A RP PERLECTED POWER ALOC 96, 23 4 CACKPE XPHOR A RP REFLECTED POWER ALOC 97, 23 4 ALOC 97, 24 ALOC 97, 25 ALOC	CUXDUER EIT OSC OVER VOLTAGE CUYENCOS EXT OSC EXT OSC ENT OSC EXT OSC	CUNCORN ETT OSC OVEN VOLTAGE CUVENCOS CAT OSC OVEN VOLTAGE CUNCOS CAT OSC CAF OUTAGE CUNCOS CAT OSC LEVY CAT OSC LEVY CAT OSC CAT O	/ DH-61 / DH-68 / DH-49 / DH-50 / DH-51 / DH-51	CVKOVEN CVEXOSC CUNRG28 CAGCKPA	EXT GSC OVERT OSC LECT OSC LOCK LOCK LECT OSC LOCK LECT OSC LOCK LECT OSC LOCK LECT OSC LOCK LOCK LOCK LECT OSC LOCK LOCK LOCK LOCK LOCK LOCK LOCK LOC	ALOG ALOG ALOG ALOG ALOG ALOG ALOG ALOG	98; 16 99; 16 96; 23 96; 23 97; 23 97; 24 96; 0		01-63 01-62 01-56 01-56 01-56 01-60 01-61
CUCKE EXT OSC :EC VOLTAGE ALOC 99,16 1 CUNTACAS A: 28 V DIREC BUS ALOC 99,16 1 CACCERA XFIRS A ACC LEVEL ALOC 96,23 4 CACCERE XFIRS A RF REFLECTED FOVER ALOC 96,23 4 CACCERE XFIRS B ACC LEVEL ALOC 96,10 4 CACCERE XFIRS B RF PORMARD FOVER ALOC 97,23 4 CXPREV XFIRS B RF PORMARD FOVER ALOC 97,23 4 CXPREV XFIRS B RF REFLECTED FOVER ALOC 97,24 4 CCLOCK 5/C CLOCK ALOC BOVER ALOC 66,0 ALOC 66,0 ALOC 66,0	CUEXOSC EXT OSC :EC VOLTAGE ALOC 99,16 1 CACCERA ZENIOR A ACC LEVEL ALOC 96,107 1 CACCERA ZENIOR A ACC LEVEL ALOC 96,107 1 CACCERA ZENIOR A RF REFLECTED POWER ALOC 96,23 4 CACCERP ZENIOR RF REFLECTED POWER ALOC 95,24 4 CACCERP ZENIOR B RF PORMARD POWER ALOC 97,24 4 CACCERP ZENIOR B RF PORMARD POWER ALOC 97,24 4 CACCERP ZENIOR B RF REFLECTED POWER ALOC 97,24 4 CACCERP ZENIOR B RF REFLECTED POWER ALOC 97,24 4 ALOC 66,0 ALOC 66,0	CUNECOSC EXT OSC :EC VOLTAGE ALOC 99, 16 1 CACKTRA XFINDA A ACC LEVEL ALOC 96, 107 1 CACCTRA XFINDA A ACC LEVEL ALOC 96, 107 1 CACCTRA XFINDA A RP PORMARD POWER ALOC 96, 23 4 CACCTRE XFINDS A RP REFLECTED POWER ALOC 96, 24 4 CACCTRE XFINDS B RP REFLECTED POWER ALOC 97, 23 4 CACCTRE XFINDS B RP REFLECTED POWER ALOC 97, 24 4 CACCTRE XFINDS B RP REFLECTED P	/DH-48 /OH-49 /OH-53 /OH-51 /DH-53	CVEXOSC CUNRG28 CAGCXPA	EXT OSC 1EK +28 V UNEG +28 V UNEG KPIDE A AC KPIDE A RF KPIDE B RF	ALOG ALOG ALOG ALOG ALOG ALOG ALOG ALOG	99,16 96,107 96,23 96,24 97,24 97,24 66,0		01-82 01-62 01-56 01-56 01-59 01-60 01-61
CUREC28 +28 V URREC BUS ALOC 98,107 II CACKER ATRIBA A CE LEVEL CXFAFED KFRIDA A RP POLYCE ALOC 96,24 CKFAFEV KFRIDA A RP POLYCED FOVER ALOC 96,24 CKFAFEV KFRIDA B RP REFLECTED FOVER ALOC 97,24 CKFAFEV KFRIDA B RP FORMALD FOVER ALOC 97,24 CKFAFEV KFRIDA B RP FORMALD FOVER ALOC 97,24 CKFAFEV KFRIDA B RP FORMALD FOVER ALOC 97,24 CKFAFEV KFRIDA B RP REFLECTED FOVER ALOC 97,24 CKCLOCK S/C CLOCK BEFLECTED FOVER ALOC 97,24 CCLOCK S/C CLOCK BEFLECTED FOVER ALOC 64,0 ALOC 64,0	CUREC28 +28 V URREC BUS ALOC 98,107 II CACCKPA RTHOR A AC LEVEL CACCKPA RTHOR A AC LEVEL CACCKPE RTHOR A RP ROBARD POWER ALOC 96,24 CACCKPE RTHOR A RP ROBARD POWER ALOC 96,24 CACCKPE RTHOR B AC LEVEL CXPSPWD RTHOR B RP FORMAND POWER ALOC 97,24 CCACCKPE STRING B RP FORMAND POWER ALOC 97,24 CCACCKPE STRING B RP FORMAND POWER ALOC 97,24 CCLOCK S/C CLOCK BEFLETTED POWER ALOC 97,24 ALOC 97,24 ALOC 64,0 ALOC 64,0	CUREC28 +28 V URREC BUS ALOC 98,107 II CACCACRA ARTHOR A AC LEVEL CACCACRA XFRIDA A AC LEVEL CACCACRA XFRIDA A ROC LEVEL CACCACRA XFRIDA A ROC LEVEL CACCACRA XFRIDA B AC LEVEL CACCACRA XFRIDA B AC LEVEL CACCACRA XFRIDA B AP FORMARD FORER ALOC 97,23 4 CACCACRA XFRIDA B AP FORMARD FORER ALOC 97,24 ALOC 64,0 ALOC 64,0	/08-49 /08-51 /08-51 /08-53	CUNRC28 CAGCKPA	+28 V UNZEC KPHDR A ACK KPHDR A RF KPHDR B ACK KPHDR B RF KPHDR B RF KPHDR B RF KPHDR B RF	ALOG ALOG ALOG ALOG ALOG ALOG ALOG ALOG	98,107 96,23 96,24 97,24 97,24 86,0	लब्ब्यब्ब्ब	01-52 01-56 01-58 01-50 01-60
CAGGERA XFIDE A ACC LEVEL CAFAFUD XFIDE A ACC LEVEL CAFAFUD XFIDE A RF POSTARD POWER ALOC CAFAFU XFIDE B RF POSTARD POWER ALOC CXPRFUD XFIDE B RF POSTARD POWER ALOC CCLOCK S/C CLOCK ALOC ALOC 66,0 ALOC 66,0	CAGGARA XFIOR A AGC LEVEL CARRED XFROR A BP PORMER ALOG 96,73 4 CARRED XFROR B RP REFLECTED POWER ALOG 96,10 CARRED XFROR B RP REFLECTED POWER ALOG 97,23 CAFBREV XFROR B RP REFLECTED POWER ALOG 97,24 ALOG 97,24 ALOG 96,10 ALOG 97,24 ALOG 96,10 ALOG 97,24 ALOG 97,	CAGGARA XFIOR A AGC LEVEL CARRYD A RP FORMARD POWER ALCG 96,13 4 CARRYE XFIOR A RP FORMARD POWER CACCARE XFIOR B AR FORMARD POWER CARREY XFIOR B RP FORMARD POWER CALGOR S/C CLOCK S/C CLOCK ALCG 97,0 ALCG 97,0 ALCG 64,0	/OH-53 /OH-51 /DH-53 /DH-53	CAGCKPA	XPHOR A RP XPHOR A RP XPHOR B AG XPHOR B RP XPHOR B RP XPHOR B RP S/C CLOCK	ALOG ALOG ALOG ALOG ALOG ALOG ALOG	96,23 96,23 96,23 97,24 97,24 66,0	.44444	01-56 01-58 01-58 01-60 01-60
CUPATED A DEPTE ALOS 95, 109 4 CXPAREV ZPING A RF POSMARD POPER ALOS 96, 24 4 CXPAREV ZPING B AR REFLECTED POPER ALOS 96, 10 4 CXPAREV ZPING B AR POSMARD POPER ALOS 97, 23 4 CXPAREV ZPING B RF POSMARD POPER ALOS 97, 24 CXPAREV ZPING B AR PRELICCTED POPER ALOS 97, 24 CXPAREV ZPING B AR POSMARD POPER ALOS 97, 24 CXPAREV ZPING B AR POSMARD POPER ALOS 97, 24 ALOS 66, 0 ALOS 66, 0	CCLOCK S/C CLOCK CCLOCK S/C C	CXPAREV KPRIS A RP FOLLAND FOURS ALOG 96,23 4 CXPAREV KPRIS A RP FOLLAND FOURS ALOG 96,24 4 CXPAREV KPRIS A RP FORMAR POURS ALOG 97,24 4 CXPREV KPRIS B RP FORMAR POURS ALOG 97,24 4 CXPREV KPRIS B RP FORMAR POURS ALOG 97,24 4 CXPREV KPRIS B RP REFLECTED FOURS A	/04-51 /04-51 /04-53	CALCARA	APHOR A RAY RPHOR A RP RPHOR B ACK RPHOR B RP RPHOR B RP S/C CLOCK	ALOG ALOG ALOG ALOG ALOG ALOG ALOG	96,24 96,24 96,10 97,23 97,24 86,0	****	01-36 01-38 01-60 01-61
CUPARD KPDS A BF POSSARD POWER ALCC CUPARD KPDS A BF REFLECTED POWER ALCC CACCERS XPDS B AC LEVEL CACCERS XPDS B AC LEVEL CAPBRU XPDS B RF POSSARD POWER ALCC CAPBRU XPDS B RF POSSARD POWER ALCC CAPBRU XPDS B RF REFLECTED POWER ALCC B7,0 ALCC 64,0 ALCC 64,0	CCLOCK S/C CLOCK CCRAREY IPHDR A RF REFLECTED POWER ALOC 96,24 4 CACCINE XPHER A RC REFLECTED POWER ALOC 96,12 4 CXPREHD XPHER B RF POWER ALOC 97,23 4 CXPREHD XPHER B RF POWER ALOC 66,0 ALOC 66,0 ALOC 66,0 ALOC 66,0	CCPAREN ENDS A SPECIAL POWER ALOC 96,23 4 CCCACKES XPHOR A REPLECTED POWER ALOC 96,10 4 CACCKES XPHOR B RF PORMAID POWER ALOC 97,23 4 CXPBREN XPHOR B SP REPLECTED POWER ALOC 97,24 4 CCLOCK 5/C CLOCK ALOC 87,0 66,0 ALOC 66,0 ALOC 66,0	/DB-51 /DB-52 /DR-53		XPHDS A RF XPHDR B ACK XPHDR B ACK XPHDR B RF XPHDR B RF S/C CLOCK	ALOG ALOG ALOG ALOG ALOG ALOG ALOG	966,23 986,24 97,24 86,0 66,0	4444	01-57 01-58 01-60 01-60
CKPARV ENDR A RP REPLECTED POWER ALOG 96,24 4 CACCARS EXPINS B ACC LEVEL. CKRENEU KINDS B RP PORMAD POWER ALOG 97,23 4 CKLOCK S/C CLOCK APPLICATED POWER ALOG 97,24 4 CKLOCK S/C CLOCK APPLICATED POWER ALOG 64,0 ALOG 64,0	CACCARS IPHOR A RF REFLECTED POWER ALGO 96,24 4 CACCARS IPHOR B AC LEVEL ALGO 97,23 4 CAPBRED IPHOR B RF PORMAIN POWER ALGO 97,24 4 CAPBRED IPHOR B RF REFLECTED POWER ALGO 97,24 4 CCLOCK S/C CLOCK ALGOR 66,0 ALGO 64,0 ALGO 64,0	CCLOCK S/C CLOCK RP REFLECTED POWER ALOG 96,24 4 CACCACRS STRING B RP CENTER ALOG 97,24 4 CCRSSEW SPINGS B RP REFLECTED POWER ALOG 97,24 4 CCLOCK S/C CLOCK ALOGORAL ALOG 67,0 ALOG 66,0 ALOG 66,0	/DB-52 /DR-53	CXPAPAD	XPHDR B ACK XPHDR B ACK XPHDR B RP XPHDR B RP S/C CLOCK	ALOC ALOC ALOC ALOC ALOC ALOC	96,24 96,10 97,23 97,24 86,0	વવવ	01-38 01-60 01-61
CACCKPB XPHDR B ACC LEVEL CKPBPHD XFHUR B RP PORMAID POWER CXPBREV XPHDR B RP REPLECTED POWER CCLOCK S/C CLOCK ALOG 97,24 ALOG 97,24 ALOG 64,0 ALOG 64,0	CACCYPS XPHDR B ACC LEVEL CAFBREW XFHDR B RP FORMAND FOWER CAFBREW XFHDR B RP REFLECTED POWER CAFBREW XFHDR B RP REFLECTED FOWER ALOG 97,24 ALOG 67,0 ALOG 66,0 ALOG 66,0	CACCYPS XPHDR B ACC LEVEL CAFBERD XFIGS B RP FOSMADD FOWER CAFBERV XPHDR B RP REFLECTED POWER CAFBREV XPHDR B RP REFLECTED POWER ALOG 97,24 4 ALOG 67,0 ALOG 64,0	:/DH-53	CXPAREV	XPHDR B ACK XPHDR B RP XPHDR B RP S/C CLOCK	ALOG ALOG ALOG ALOG ALOG	96,10 97,23 67,24 66,0	444	01-59 01-60 01-60
CXPBRU XPIDE B RP POREARD POWER ALOG 97,23 4 CCLOCK S/C CLOCK REPLECTED POWER ALOG 97,24 4 ALOG 86,0 ALOG 86,0 ALOG 64,0	CKEBFUD KPHUR B RF PORMARD POWER ALOG 97,23 4 CCLOCK S/C CLOCK REPLECTED POWER ALOG 97,24 4 CCLOCK S/C CLOCK ALOG 67,0 ALOG 67,0 ALOG 64,0	CKFBFUD KPHUR B RF PORMARD POWER ALOG 97,23 4 CCLOCK S/C CLOCK B RF REPLECTED POWER ALOG 97,24 4 CCLOCK S/C CLOCK ALOG 87,0 ALOG 86,0 ALOG 64,0	,	CACCYPB	XPHOR B RP XPHOR B RP S/C CLOCK	A100 A100 A100 A100	97,24 97,24 86,0	••	09-10 09-10
CCLOCK S/C CLOCK REPLECTED POWER ALOG 97,24 A CCLOCK S/C CLOCK REPLECTED POWER ALOG 97,24 A CCLOCK S/C CLOCK REPLECTED POWER 86,0 ALOG 64,0 ALOG 64,0	CCLOCK XFORM B BR REFLECTED FOWER ALOG 97,13 4 CCLOCK S/C CLOCK BEFLECTED FOWER ALOG 97,13 4 CCLOCK S/C CLOCK ALOG 97,13 4 CCLOCK S/C CLOCK 66,0 ALOG 64,0 ALOG 64,0	CCLOCK S/C CLOCK REPLECTED POWER ALOG 97,24 4 CCLOCK S/C CLOCK REPLECTED POWER ALOG 97,24 4 CCLOCK S/C CLOCK 66,0 ALOG 64,0	/mu e.t	2 10 20 20 20 20 20 20 20 20 20 20 20 20 20	APRIDA B RP S/C CLOCK	ALOG ALOG ALOG ALOG	97,24 97,24 98,0 98,0	• •	01-80
CCLOCK S/C CLOCK ALOG 97,24 A CCLOCK S/C CLOCK ALOG 67,0 ALOG 64,0 ALOG 64,0	CCLOCK S/C CLOCK ALOC ED POWER ALOC 97,24 ALOC 8/C CLOCK ALOC 86,0 ALOC 64,0 ALOC 64,0	CCLOCK S/C CLOCK B RP REPLECTED POWER ALOG 97,24 A CCLOCK S/C CLOCK ALOG 67,0 ALOG 66,0 ALOG 64,0	\$C-BO!	CArbrau	XPNDR B RF REFLECTED POYER S/C CLOCK	ALOC ALOC ALOC	97,28 87,0 9,0 0,0	•	19-10
S/C CLOCK ALOG 87,0 ALOG 64,0 ALOG 64,0	S/C CLOCK ALOG 87,0 ALOG 64,0 ALOG 64,0	S/C CLOCK ALOG 87,0 ALOG 64,0 ALOG 64,0	/DB-55	CAPBREV	איכ כרסכע	ALOC ALOC ALOC	0,0 0,0 0,0		
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Table 2-24. Cabi Telesetry List

SVS-10123A Volume II October 1982

ORIGINAL PAGE IS OF POOR QUALITY

HBTR
NARROHBAID TAPE RECORDER
(STANDARD TAPE RECORDER)

2-122

ORIGINAL PAGE IS OF POOR QUALITY

USER 10	ACRONYM	TLM PUNCTION DESCRIPTION	SCNL	NTX LOC Col, Row	SAPL	×	ADDRESS RIU-CH
KBTR-01	2	RECORDER NO. 1 DIGITAL MUX:	,		;		01-64
	MIFMEDE	MOID 2	20	8,11	91		
	NIIPSCAD	TAPE SPEED COMMAND STATUS	\$0.0	10,11	31		
				•			
		10.458					
		6.229					
		2.614					
		1.307					
		0.654					
		0.327					
		33.465					
		16.733					
		8.356					
		4.183					
		2.092					
		1.046					
		0.523					
		26.772					
		~					•
		6.693					
		11010 3.34/ LFS					
	HIDIRGED	=	S8	2.5	71		
		NOT USED (DIGITAL 0)	9		9		
		NOT USED (DIGITAL O)	6		2 -		
		WORD 3			2		
	NIENCOD	SERVO ENCODER CHD STATUS SEC/PRI	0	11.02	16		
		NOT USED (DIGITAL 0)	S1	11,02	91		
		NOT USED (DIGITAL 0)	S2	11,02	9		
		NOT USED (DIGITAL 0)	83	11.02	16		
	NIPBCRP	P/B DATA GROUP SELECTED	84-5	11,02	16		
		OO GROUP A'					
				,			
		11 GROUP D					
		NOT USED (DIGITAL 0)	S6	11,02	16		
		NOT USED (DIGITAL 0)	S7	11,02	91		
		WORD 4					
		NOT USED (DIGITAL 0)	9	11,03	91		

Table 2-25. NBTR Telesetry List

Table 2-25. HBTR Telemetry List

USER ID	ACRONYM	TLM PUNCTION DESCRIPTION	SCHL	MIX FOR	EATE	ADDRESS M RIU-CH
		USED (P!3ITAL	S1	11,03	91	
		NOT USED (DIGITAL 0)	2-5 5	11,03	2 2	
		USED (DICITAL			2 -	
		USED (DICITAL	S — S	11,03	2 2	
		USED (DICITAL	88	11,03	16	
		D (DICITAL	s1	11,03	16	
		WORD S	e G	:	:	
	NINOUE	OPERATING MUDE	7-05	11,04	9	
		110 KECOKO				
	2.00			7	,	
	MILLEDIA	CARL DIRECTION REVERSE/FORMARD		3 3	2:	
	MIOPORE	3	C-62	5 ,11	9	
		01 CROUP C				
		10 CROUP B				
		ROT USED (DIGITAL 0)	98	11.06	16	
		NOT USED (DIGITAL 0)	87	11.04	91	
		HORD 6		•		
	NITROTE	TERTIAN BOT CUTTOR OBSORE	5	11 05	7	
	NITEOTE	TOTAL BOT CULTURE ON OR	9 -	50.11	9	
	5103170	CENTLANT EON OFFICE ON/OFF	1	50	2 :	
	MISLOCK	SERVO L'ACREL/ ROI LOCAED	72	20,11	9	
		NOT USED (DICITAL 1)	S3	11,05	16	
	NI SEOTS	SECONDARY GOT SENSOR LIT/NOT LIT	43	11,05	91	
	MISEOTS	SECONDARY ROT SENSOR LIT/NOT LIT	88	11.05	91	
	N) PROT	PRIMARY ROT VRS/NO	4	11.05	1	
	200					
	103511	TAIDAN EULICA/NO			2	
				:		
	HISINCE	STAC MOKE &		70,11	;	
		nor used (Sightal 0)	9	70,11	16	
		HOT USED (DIGITAL 1)	31	11,07	91	
		NOT USPD (DICITIT 0)	S2	11.07	16	
		NOT USED (DIGITAL 1)	<u> </u>	11.07	16	
		10 141 1010 1000 1000	9	11 07	91	
		() TUINO () COUNTY ()			2 .	
		BOI DEED (DIGITAL 1)	2-2	5,11	2	
		MARK (DIGITAL	2-6	11,07	91	
		AVN MADE (DIGITAL O)	87	11 07	7.	

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Table 2-25. WIR Telesatry List

USER 19	ACROBYM	TLM PUNCTION DESCRIPTION	SCHL	MTX LOC COL, ROM	SAPL	x	82-018 810-C8
KBTR-02	K2 PVROB	RECOZDER NO. 2 DIGITAL HIX: Word I HSB-Pir On/OFF	8-7	12,00	91		59-10
2-125	#21 P5 CP	MUND 4. MUND 1. MUN	* \$	15,01	2		
	KCDIROKO	0.837 0.418 0.418 11827103 120 (0161	9-6	12,01 12,01 12,01	91 91 91		
	HZ ENCOD	6 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	\$ \$ \$ £ £ £ £	12,02 12,02 12,02 11,02 12,02	99999		
		UI CROUP C 10 CROUP D HOT USED (DIGITAL 0) WORD 4	8-1-8	12,02	91 91		

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ADMESS RIU-CB																٠																												
×																																												
SATE LATE	16	91 :	2 :	9 .	9.	9 :	9	2	ì	9						9	91				ļ	91	91		91	91	16	16	:	9 :	2	16	91	}		16	2 :	9 :	91	91	16	1.5	2 :	9
MATA LOC COL, ROH	12,03	12,03	5,0	50,41	12,03	20,21	12,03	12,03		5,71				•	;	12,04	12,04					12,04	12,04		12,05	12.05	12.05	12.05		20,41	12,05	12,05	12.05	•	12 07	12,03		200	12,07	12,07	12.07	12 07	200	10,11
SCAL TYPE	9	- C	7 .	, .	7 '	ָרָרָי מיי	9	87	,	7-2					,	8-3	84-5					9	37		9	8	82	83			ر ا	8-P	57	,		9		1	S2	3 <u>—3</u>	¥-5		3 6	9
TLM PUNCTION DESCRIPTION	USED (DICITAL	USED (DICITAL	USED (DIGITAL	USE' (DIGITAL		חיים (חורונעד	ROT USED (DICITAL 0)	ZD (DICITAL	WOKU >	š	100 RC. USED	OIO MOT USED			דסו שונים	TAPE DIRECTION REVERSE/PORMAND	OPERATING GROUP	OO CHOUP A		C allow Ct	or Group D	ROT USED (DICITAL 0)	NOT USED (DIGITAL 0)	WORD 6	TERTIARY BOT SWITCH ON/OFF	TERTIARY EOF SWITCH ON/OPF	SERVO LOCKED/ROT LOCKED	HOT USED (DIGITAL 1)			SECONDARY EOT SENSOR LIT/NOT LIT	PRIMARY BOT YES/NO	PRIMARY BOT YES/NO	2 0805	AYRC HARD &	MONEY CATALON	rot total (blotten o)	220		BOT USED (DICITAL 1)				SINCE MAKE (DIGITAL U)
ACROHYM									200	MARNUS.						M2TPDIR	HZOPCAP								M2 TBOTS	HZTEOTS	HZSLOCK			M250013	HZSEOTS	M2PBOT	M2P2OT		M7CVINC2									
USER IO																			-1																									

Table 2-25. HBTM Telemetry List

ORIGINAL PAGE IS OF POOR QUALITY

USER ID	ACRONYM	TLM FUNCTION DESCRIPTION	TYPE	COL, R 34	EATE	Z.	RIU-CH
		SYNCH MARK (DIGITAL 0)	s-7	12,07	91		
MBTR-03		RECORDER NO. 1 ANALOG MUX NO. 1:					69-10
	HITUPSI	TU PRESSURE	ALOG	84,00	80		
	NISPEED	MOTOR SPRED	ALOS	84,01	•		
	HIMTRI	MOTOR CURRENT	ALOG	84,02	ထ		
	HI PTACH	TACHOMETER SENSOR-PRIMARY	ALOG	84,03	60		
	HI PWR SV	+SV POWER	ALOG	84,04	•		
	HIASEOT	SECONDARY EOT SENSOR	ALOC	84,05	6		
	HIPBEEL	REEL PRIMARY SENSOR	ALOC	84,06	«		
	NIPIEHC	ENCODER SELISOR PRIMARY NO. 1	ALOG	84,07	s 0		
	MISREEL	REEL REDUNDANT SERSOR	ALOC	84,08	Φ		
	HIASBOT	SECONDARY BOT SENSOR	ALOG	84,09	œ		
	RISTACH	TACHOMETER SENSOR-SECONDARY	ALOG	84,10	@		
	NIPZENC	ENCODER SENSOR PRIMARY NO. 2	ALOC	84,11	œ		
	N1 P3 ENC	ERCODER SENSOR PRIMARY NO. 3	ALOG	84,12	Φ		
	HISIEHC	ENCODER SEMSOR SECONDARY NO. 1	ALOG	84,13	•		
	HISZENC	ERCODER SERSOR SECORDARY NO. 2	ALOC	84,14	æ		
	NIS3ENC	ENCODER SENSOR SECONDARY NO. 3	ALOG	84,15	∞		
HBTR-04		RECURDER NO. 2 AHALOG MUX NO. 1:					01-10
	NZTUPSI	TU PRESSURE	ALOC	85,00	Φ		
	H2SPEED	MOTOR SPEED	ALOC	85.01	•0		
	HZHTRI	HOTOR CURRENT	ALOG	85,02	•		
	H2PTACH	TACHOMETER SENSOR-PRIMARY	ALOG	85,03	•		
	N2 PUR SV	+5v Power	ALOG	85,04	Ø		
	NZASEOT	SECONDARY ROT SEHSOR	ALOC	85,05	®		
	H2PREEL	REEL PRIMARY SENSOR	ALOC	85,06	80		
	N2 P1 EMC	ENCODER SENSOR PRIMARY RO. 1	ALOG	85,07	œ		
	NZ SREEL	REEL REDUNDANT SEUSOR	ALOG	85,08	œ		
	N2ASBOT	SECONDARY BOT SERSOR	ALOG	85,09	æ		
	NZSTACH	TACHOMETER SENSOR-SECONDART	ALOC	65,10	•		
	H2P2ENC	EHCODER SENSOR PRIMART NO. 2	ALCC	85,11	0		
	N2P3ENC	ENCODER SENSOR PRIMARY NO. 3	A.00	85,12	æ		
	N2S1EHC	ENCODER SENSOR SECONDARY NO. 1	ALOC	85,13	æ		
	N2S2ERC	ENCODER SENSOR SECONDARY NO. 2	ALOG	95,14	6 0		
	N2S3ENC	ENCODER SENSOR SECONDART NO. 3	ALOG	85,15	ප		
KBTR-05		RECORDER NO. 1 ANALOG MIX NO 2:					01-114
	BIPBV8	CHANNEL 8 P/B VOLTAGE	ALOC	79,00	80	•	
	N1PBV2	CHANNEL 2 P/B VOLTAGE	ALOG	10,67	æ	60	
	N1PBV7	CHANNEL 7 P/B VOLTACE	ALOC	79.02	ස	œ	

Table 2-25. NBTR Telemetry List

ORIGINAL PAGE IS OF POOR QUALITY.

ADDRESS RIU-CH														01-117															06-10	29-10						
×	•	80	80	~	∞	00	ø	4	80	•	æ	80	60		8	80	80	∞ •	œ (20 α) ((∞	69	æ	∞ •	Φ,	.	D a	•							
RATE		0	œ	~	æ	6	æ	60	.	00	æ	80	a		æ	•	80	©	10	20 44) ac	· œ	∞	œ	€0	©	19 (10 G	128	128						
MTA LOC COL, ROM	79,03	79.04	79,05	79.06	79,07	79.08	79,09	79,10	79,11	79,12	79,13	79,14	79,15		80,00	80,01	80,02	80,03	80,08	50,08	80.02	80,08	80,09	80,10	80,11	80,12	80,13	e1 08	89,00	00'06	11,0	5	11,02	11,03	11,04	11,05
SCRL TYPE	ALOG	ALOC	ALOG	ALCC	ALOC	ALOG	ALOG	ALOG	ALOG	ALOG	ALOG	ALOG	ALOG		ALOG	ALOG	ALOG	ALOG	ALOC	ALOC	A100	ALOC	VT0C	ALCC	ALOG	ALOC	VIOC	ALOC S. Oc	ALOC	ALOG						
TLM PUNCTION DESCRIPTION	CHANKEL 1 P/B VOLTAGE	CHANNEL 5 P/B VOLTAGE	CHANNEL 6 P/B VOLTAGE	CHANNEL 4 P/B VOLTAGE	•	+5V POHER SUPPLY VOLTAGE	BU TEMPERATURE	TH TRMPERATURE	GROUND	-6V POWER SUPPLY VOLTAGE	-12V POWER SUPPLY VOLTAGE	+15V POWER SUPPLY VOLTACE	+12V POWER SUPPLY VOLTAGE	RECORDER NO. 2 ANALOG MIX NO. 2:	CHANNEL B P/B VOLTAGE	CHANNEL 2 P/B VOLTACE	CHANNEL 7 P/B VOLTAGE	CHANNEL 1 P/B VOLTAGE	CHANKEL 5 P/B VOLTACE	CHANNEL & P/B VOLTAGE	CHANNEL 3 P/R DOLTACE	+5v Power Supply Voltage	EU TEMPERATURE	TU TEMPERATURE	CROUND	-6V POWER SUPPLY VOLTAGE	-IZV POWER SUPPLY VOLTAGE	A13V POWER SUPPLY VOLTAGE	RECORDER NO. I SERVO ERROR	necorder no. 2 servo error	NBTR 1 STHC WORD		STATUS WORD NO. 2	STATUS WORD NO.	STATUS WORD	STATUS WORD NO.
ACROHYM	NI PBV1	NI PBVS	NI PBV6	NI PBV4	NI PDV3	N1 PSP 5	N1 EUTHP	PATULIN	NICND	NI PSH6	NI PSNI 2	NI PSP 15	NI PSP12		N2PBV8	N2PBV2	H2PBV7	NZPBV1	NZPBVS	NZPBVB	NZ PBV 3	N2PSP5	HZEUTHP	NZTUTHP	NZCND	N2PSN6	NZPSHIZ	M2PSP15	HISVERA	H2SVERR	NISYNC	2000	MISTATO3	NISTAT04	MISTATOS	NISTAT06
USER ID														NBTR-06															KBTR-07	NBTR-08						

Table 2-25. NBTR Telemetry List

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ADDRESS RIU-CR	
*	
SAFL	
MTT LOC COL, RGH	2122222222
SCIL TYPE	
ZSCRIPTION	WOED 50.7 WOED 50.7 WOED 50.2 WOED 50.4 WOED 50.4 WOED 50.6 WOED 50.6 WOED 50.6 WOED 50.6 WOED 50.6 WOED 50.7 WOED 5
TLM PURCTION DESCRIPTION	STATUS WORD ED. 7 STATUS WORD ED. 7 STATUS WORD ED. 2 STATUS WORD ED. 5 STATUS WORD ED. 5 STATUS WORD ED. 5 STATUS WORD ED. 7 STATUS WORD
ACROISTM	HI STATO? HI POSE
USER 1D	2-129

Table 2-25. MBTR Telemetry List

MODULAR ATTITUDE CONTROL SUBSTSTEM

Table 2-26 HACS

ORIGINAL PAGE IS OF POOR QUALITY

USER ID	ACRONYM	TLM PUNCTION DESCRIPTION	2	COL, ROW	RATE	×	810-018
HACS-01		FSS 32-BIT DATA:					05-00
	APS SOUTT	OPT AXIS BOT ABOUT PSS T AXIS (MSB)	29-7	10,96	-		
		OPT AXIS GOT ABUOT 75S T AXIS (LSB)	2-S	97,02	, =		
		EUR ACQUIRED TES/RO		97,02	,		
				70.16	٠.		
	Arssoura	OFT AXIS RUT ABOUT F38 A AXIS (RSB)	7-05	20,38	-		
		OFT AXIS BUT ABOUT ISS X AXIS (LSB)		99,02			
	APS SPUT	POWER STATUS	56-7	99,02	-		
		10 - 01					
		11 - OFF					
HACS-02		ACE A 164-DIT IRU DATA	8 1718	W/A			02-01
HACS-10		ACE D 144-BIT IRU DATA	SEB	E/A			02-12
MACS-03		4	SEB	A/B			02-02
MACS-11		€	87.0	V/9			02-13
MACS-04		~		ı ì			0-20
	A&RZCLAA	•	g	96 ns	-		
	A6H7CHAA	: =	, [20,00	٠.		
	ATOLOGO	•		7000	٠.		
	AIRIRIA	٠ ،	7 .	60'08	- 4 •		
	ATRZHTA	<	- B	96,05	-1		
	ANTEALA	A REATER	9	96,03			
	AITTAIB	~	8 1	96,05	-4		
	ABTRA2A	<	9	30,98	-		
	AHTHA2B	ACE A REATER 2D POWER OFF/OR	87	96.05	-4		
	AHTRA3A	ACE A MEATER 3A POUER OFF/OR	2	97.05	, ,,,,,		
	AUTEA3B	ACE A HEATER 3D POSER OFF/OH	S-1	97,05	-		
	AAZTROS	•	3-2	97.05	-		
	AAZTROA	<	8-3	97.05	-		
	AAYTROR	4	4	97.08	-		
	AAYTOOA	ACO A DITCH MAC PROMISE A CE/OVE	j	200	٠ -		
	AATTOO		` \	20,00	٠,		
	0000000	٠ <	7	20,10	4 -		
	Way t way	4		(0,1%	-		;
KMC3-12			,	;	,		♦1-20
	A4HZCLAB	⋖	2	89,96	-4		
	A4HZCLBB	ACE D 4ME CLOCK ON/OFF	[s	99,08	~		
	ATRIBUTS	ACE B PHST 1 HEATER POWER OFF/OH	82	89.96	-		
	ATROHTR	ACP B PHST 2 ERATER POSTR OFFICE		96.68	· •		
	A LOCALIA		, ,		4 .		
	WIGHTON	o previous to	,	99,00	٠,		
	AHTKELD	U DEATES IN	<u>_</u>	70°08			
	AHTR62A	B REATER	2	96,68	_		
	ANTRD 28	ACE B BEATER 28 POEER OFF/OR	22	96,68			
	AHTRESA	63	9	97,68			

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Address RTU-Ch								02-04																								C1-70									
¥																																									
RATE		-	_				-		-4	-		-	-	~	~ 1	⊶ .	٠.	-4 ,	٠ .	-			•	-		-			_	_	-	-		-	-	- ،		,-4	-	=	-
MIX 100 001, 104	93.60	00'/6	97,68	97,63	97,68	97,68	97,68	•	19,96	19,96	96,61	14,96	,°96	.96,6	19'96	19,96	10,76	19.76	10.70	10,76	10,17	10,76	97.61	98.61	19.86	19,86	19,86	19'86	98,61	98,61	19.86	66.67	96.62	96,62	96.62	96.62	96.62	96,62	96,62	97,62	97,62
SCM TARE		7 .	6 -8	9	SS	9-8 8	8-1		S O	S1	S2	S3	S8	s5	2-0	S7	٠ م	<u> </u>	7 .	7			S-7	0	S1	82	83	8	SS	- Q	S7	ĵ	8	82	83	8	85	9-8	S7	S O	2S
YM TLM PUNCTION DESCRIPTION	8	979	ACE B			QB ACR B ROLL MAC TORQUER B ON/077	ACE B	ACE A	ACE A		ACE A	ACE A	ACR A	ACE A	ACE A	V	ACE A	ACE A	ACE A	ul ace a raw led 1 Position On/Ore	V G D V	4 A A	ACB A	ACE A	ACE A	ACE A		ACE A	ACE A	ACE A	ACE A	ACE B SING SINIOS:	ACR B	ACE B	ACE B	ACR B	ACE B ROLL IRU	ACE B	ST ACE B THRUSTER CONTROL ON/OFF	ACE B	S2 ACE B YAW CSS 2 ON/OPP
ACRONYM	0000	WDC IR	ABZTROA	ABYTROB	ABYTRQA	ABATRQB	ABXTROA		AAXCSS1	AAXCS\$2	AAKESGYC	AAXIRUI	AAXI RU2	AAXRATE		AATHRST	AAZCSSI	AAZUSSZ	AAZESCIC	AAZIKUI	AVEATO	AATAM	AATHRUM	AAYCSS1	AACSS 2	AAYESGYC	AAIRUL	AAIRU2	AAZRATE	AASFULD	AASHLRT	ARXCSS1	ABKCSS2	ADXESCYC	ABXIRUL	ABXIRU2	ABXRATE		ABTHRST	ABZCSS1	ABZCSS2
USER ID								MACS-05										2-	·1 '	32												C1-2040									

Table 2-26. MACS Telemetry List

USER ID	ACRONYM	TLM PURCTION DESCRIPTION	T M	COL, ROH	RATE	×	ADTRIESS RIU-CE
	ABZESGYC	ACE B TAW CTC OH/OFF	S2	97,62	-		
	ABZIRU1	ACE B YAW IRU 1 POSITION ON/OFF	83	97,62			
	ABZ IRU2	ACE B TAU IRU 2 POSITION ON/OFF	\$S	97,62			
	ADYRATE	ACE B PITCH IRU 1/2 RATE ON	85	97,62	-		
	ABTAM	0	9	97,62	-		
	ABTHRUM	9	23	97.62	-		
	ABYCS31		9	98,62	-		
	ABYCSS2	•	S1	98,62	-		
	ABKESGYC	ACE B PITCH ES ON/OFF	S2	98,62	-		
	ABXIRUL	ACE B PITCH IRU 1 POSITION ON/OFF	83	98,62	-		
	ABXIRU2	ACE B PITCH IRU 2 POSITION ON/OFF	8	98,62	-		
	ABZRATE	ACE B YAW IRU 1/2 RATE OR	85	98,62	_		
	ABS PHLD	ACE B SAFE-EGLD OB/OFF	S-6	98,62	-		
	ABSHLRT	ACE D SHUTTLE RETRIEVAL OR/OFF	2-1	98,62	-		
MACS-06		PHST 1 WORD 1 16-BIT DATA:					02-08
	AST1HOR2	HOR STAR POSITION	89 -3	75,76	7		
		UNUSCO BIT	S	97,57	~		
	AST15HBO	OPTICS SHTB CLOSED BY BOA TES/HO	88	97,57	7		
	ASTISTAR	STAR PRESENT TES/KO	86	97,57	7		
	AST18IITS	OPTICS SHTR CLOSED BY TS YES/HO	S7	97, 57	7		
MACS-07		FUST 1 WORD 2 16-BIT DATA:					05-09
	AST I VRT2	VERT STAR POSITION	80-3	97,58	7		
		UKUSED BIT	9	97,58	7		
	ASTITOL	PHE SUPPLI CUT OF TOLERANCE NO/TES	SS	97,58	~		
į	,	UNINSED BIT	86-7	97,58	7		
MACS-08	FRST 2 WC	FRST 2 WORD 1 16-BIT DATA					01-20
	AST ZHORZ	ROW STAR POSITION	6-03 -3	97,59	~		
		UNISED BIT	7	97,59	~		
	AST2SKB0	OPTICS SHTR CLOSED BY BOA YES/EO	S-5	97,59	7		
	AST2STAR		3-6	97,59	~		
	AST2SHTS	OFTICS SHIR CLOSED BY TS TES/ED	8-7	97,59	~		
HACS-09	PHST 2 WK	PHST 2 WORD 2 16-BIT DATA					02-11
	AST2VRT2	Vert star position	80-3	97,60	~		
		UNUSED BIT	4	97,60	~		
	AST2TOL	PWR SUPPLY OUT OF TOL YES/HO	S-5	97,60	~		
		UNUSED BITS	86-7	97,60	~		
MACS-14		ACE A 24-BIT COMPUTER/PAYS WORD 1:		•			02-09
	AAXWHEN	ROLL SIM PAYS/OBC ENABLE	9	96,76	-		
	AAYUHEN	PITCH SRW PAYS/OBC ZMASLE	S1	96.76			
	AAZWHEN	TAW SEW PAYS/OBC ENABLE	82	96,76	•		
	AASUHEN	SKEW SRW PAYS/OBC ENABLE	83	96,76	-		
	41.0004	SPPARATION SW A CLOSED/OPEN	1	96.76	-		

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THE PUNCTION DESCRIPTION THE OOL, NOW MATE M	USER 10			327	3			ADDRESS
MACS-15 ACCOPPUZ STANTION SW B CLOSED/OREG S6-7 95,76 1		АСВОНТИ	TLM PUNCTION DESCRIPTION	71.PE	COL, ROH	RATE	x	R10-C#
MACS-15		AASPSWB	SEPARATION SW B CLOSED/OPER	85	96,76	-		
AACOMPA2 ACE A 2-BIT CORPUTES/PATS NORD 2 SG-7 97.76 II AACOMPA2 ACE A 24-BIT CORPUTES/PATS NORD 3 SG-7 97.76 II AAXWEEN ROLL SHW PATS/OBC EAABLE SG-1 SG-1 95.77 II ABXWEEN RYCH SHW PATS/OBC EAABLE SG-1 SG-1 96.77 II ABSWEEN STEW SHW PATS/OBC EAABLE SG-1 96.77 II ABSWEEN STEW SHW PATS/OBC EAABLE SG-2 96.77 II ABSWEEN SHW PATS/OBC EAABLE SG-2 96.77 II ABSWEEN STEW SHW PATS/OBC EAABLE SG-2 96.77 II ABSWEEN SHW PATS/OBC EAABLE SG-2 96.77 II ABSWEEN SHW PATS/OBC EAABLE SG-2 96.77 II ABSWEEN SHW PATS/OBC EAABLE SG-2 96.77 II ARUNERIC IBU CHANTEL D ADACE LOW/HIGH SG-1 SG-1 SG-1 SG-1 SG-1 SG-1 SG-1 SG-1			NOT USED	29-7	96,76	-		
ACONENTS ACE A 2-BIT CORPUTED/PRES BORD 3 SO-7 99,76 II ARWHIER PTCH SHE PATS/OBC EMBLE 80 96,77 II ARWHIER PTCH SHE PATS/OBC EMBLE 81 96,77 II ARSHER SECH SHE PATS/OBC EMBLE 82 96,77 II ARSHER SECH SHE PATS/OBC EMBLE 82 96,77 II ARSHER SECH SHE PATS/OBC EMBLE 83 96,77 II ARSHER SECH SHE PATS/OBC EMBLE 83 96,77 II BILDYL VORD US A CLOSED/OPEN 83 96,77 II BILDYL VORD US A CLOSED/OPEN 83 96,77 II ATRURNG IND CHANKEL A DOVER LOW/HIGH B1 96,77 II ATRURNG IND CHANKEL A DOVER DAY/OFF B1 96,77 II ATRURNG IND CHANKEL A POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL A POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL A POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL A POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL A POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL B POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL B POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL B POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL B POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL B POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL B POWER DAY/OFF B3 96,72 II ATRURNG IND CHANKEL B POWER DAY/OFF B3 97,72 II ATRURNG ATRURNG IND CHANKEL B POWER DAY/OFF B3 97,72 II ATRURNG ATRURNG IN STATUS ATRURNG ATRURNG A POWER DAY/OFF B3 97,72 II ATRURNG A A THERE THEOUT/NO THEOUT B3 97,72 II ACSHATH GAS A THERE THEOUT/NO THEOUT B3 97,72 II ACSHATH GAS A THERE THEOUT/NO THEOUT B3 99,72 II ACSHATH GAS A THERE THEOUT/NO THEOUT B3 99,72 II ACSHATH GAS A THERE THEOUT/NO THEOUT B3 99,72 II ACSHATH GAS A THERE THEOUT/NO THEOUT B3 99,72 II ACSHATH GAS A THERE THEOUT/NO THEOUT B3 99,72 II ACSHATH GAS A THERE THEOUT/NO THEOUT B3 99,72 II ACSHATH GAS A THERE THEOUT/NO THEOUT B3 99,72 II ACSHATH GAS A THE THEOUT/NO THEOUT B3 99,72 II ACSHATH GAS A THE THEOUT/NO THEOUT B3 99,72 II ATRURNG GAS B TEST/HO THEOUT B3 99,72 II ATRURNG GAS B TEST/HO THEOUT B3 99,72 II ATRURNG GAS B TEST/HO THEOUT GAS B TEST/HO B3 99,72 II ATRURNG GAS B TEST/HO THEOUT GAS B TEST/HO B3 99,72 II ATRUR		AACOMP1/2		20-7	97,76	-1		•
ARSS-15 ARWHER ROLL SHE PRYS ONE CHARLS ABVRHER ROLL SHE PRYS ONE CHARLS ABVRHER ROLL SHE PRYS ONE CHARLS ABSTRICH ROLL SHE PRYS ONE CHARLS ABSTRICH SKU SEM PRYS ONE CHARLS BOT USED AIRURANG ILLYCLL WORD OI: ASTRIPRA PHYS I POWER ON/OFF AIRURANG ILLYCLL WORD OI: ASTRIPRA PHYS I POWER ON/OFF AIRURANG ILLYCLL WORD OI: ANANED PR PHYS I POWER ON/OFF AIRURANG ILLYCLL WORD OI: ANANED PR PHYS I POWER ON/OFF AIRURANG ILLYCLL WORD OI: ANANED PR PHYS I POWER ON/OFF AIRURANG ILLYCLL WORD OI: ANANED PR PHYS I POWER ON/OFF AIRURANG ILLYCLL WORD OI: ANANED PR PHYS I POWER ON/OFF AIRURANG ILLYCLL WORD OI: ANANED PR PHYS I POWER ON/OFF AIRURANG IS STATUS ACSHATH CSM A TRES PRODUCT BE-0 97,72 II ANANED PR PHYS I STATUS ACSHATH CSM A TRES PRODUCT BE-0 97,72 II ANANED PR PHYS I STATUS ACSHATH CSM A TRES PRODUCT BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACSHAD OI: ACHIED ACHIED PRODUCT BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED PRODUCT BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATUS ACHIED ACHIED BE-0 97,72 II ANANED PR PHYS I STATU		AACOHPW3		20-1	93,76			
ABYRIEN PLTCH SEW PATS/OBC EMALE ABYRIEN PTTCH SEW PATS/OBC EMALE ABSTRIEN STANDARD SENDER ABSTRIEN STANDARD SENDER ABSTRIEN STANDARD SENDEN ABSTRIEN STANDARD SENDEN BILVEYL WORD OI: AIRURANG IRU CHANEZ LOW/HIGH AIRURANG IRURANG	MACS-15		ACE B 24-BIT COMPUTER/PAYS WORD 1:					02-01
ABSYMIES PITCH SKW PAYS/ODC EMABLE ABSYMIES AND SKW SRW PAYS/ODC EMABLE ABSYNIEM SKW SRW PAYS/ODC EMABLE ABSYNIEM SKW SRW PAYS/ODC EMABLE BASSNIEM SKW SRW PAYS/ODC EMABLE ABSSNIEM SKW SRW PAYS/ODC EMABLE BASSNIEM STATUS SW A CLOSED/OPEN S—— 96,77 11 AIRURBENG IBU CHANKEL & RANGE LOW/HIGS B—— 96,77 11 AIRURBENG IBU CHANKEL & RANGE LOW/HIGS B—— 96,72 11 AIRURBENG IBU CHANKEL & RANGE LOW/HIGS B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IBU CHANKEL & POWER ON/OPP B—— 96,72 11 AIRURBENG IS A POWER ON/OPP B—— 96,72 11 AIRURBENG IS A POWER ON/OPP B—— 96,72 11 ALMA AND STORE		ABXWIEN	ROLL SRH PAYS/OBC EMABLE	9	11,96	-		
ABSCHIEM AND SER PAYS/ODG CHARLE ABSCHIEM AND SER PAYS/ODG CHARLE ABSCHIEM SEEM SER PAYS/ODG CHARLE ABSCHIEM SEEMATTON SEEMATTON SEEMATTON SEEMS ABSCHIEM SERVATION SEEMATTON SEEMS ABSCHIEM SERVATION SEEMS CENABLE BOTOURD AIRURANCE IN CHANKEL A LAKEZ LOW/HIGH AIRURANC INU CHANKEL E RANGE LOW/HIGH AIRURANC INU CHANKEL C POWER ON/OPF AIRURANCE INU CHANKEL C POWER ON/OPF AIRURANCE INU CHANKEL C POWER ON/OPF AIRURANCE INU CHANKEL C POWER ON/OPF ASTIPMA FIRST I POWER ON/OPF AIRURANCE INU CHANKEL C POWER ON/OPF AIRURANCE IN CHANKEL C POWER ON/OPF AIRURANCE IN THE PRINCE ON/OPF AIRURANCE IN THE OWER ON/OPF AIRURANCE IN THE THEOUT/NO TIMEOUT ACSHATM GSH A THERE THEOUT/NO TIMEOUT ACSHATM GSH A THERE THEOUT/NO TIMEOUT ACSHATM GSH A THERE REALED/DISABLED AIRURED SEEW WHEEL ENABLED/DISABLED AIRURED SEEW WHEEL ENABLED/DISABLED AIRURANCE HORD IN THE THEOUT/NO TIMEOUT ACSHAED AIRURANCE HORD ON: AIRURANCE		ABYMIER	PITCH SRW PAYS/OBC EMABLE	8-1	11,96			
ASSENTIAN SKEW SER PAYS OF EXABLE ASSESSA STRATTON SH A CLOSED/OPEN 8—3 96,77 11 ASSESSA STRATTON SH A CLOSED/OPEN 8—5 96,77 11 BILLVELL WOLD OI: AIRUMARIC INU CHANKEL B ANGEZ LOW/HIGH AIRUMARIC INU CHANKEL A RAGEZ LOW/HIGH AIRUMARIC INU CHANKEL A POWER ON/OPF AIRUMARIA INU CHANKEL A POWER ON/OPF AIRUMARIA INU CHANKEL A POWER ON/OPF ASTIPMA RING CHANKEL A POWER ON/OPF ASTIPMA RING CHANKEL A POWER ON/OPF ATANDER INU CHANKEL B POWER ON/OPF ATANDER INU CHANKEL B POWER ON/OPF ATANDER INU CHANKEL B POWER ON/OPF ATANDER INU THERE INVESTIGATION SAIROZ SA NOT THERE INVESTIGATION SAIROZ SA NOT THERE INVESTIGATION SAIROZ SA NOT THERE INVESTIGATION ACSHATH CSM A THERE INVESTIGATERD ACSHATH CSM A THERE INVESTIGATEDD ACSHATH CSM A THERE INVESTIGATEDD ACSHATH CSM A THERE INVESTIGATEDD ACSHATH CSM A THERE INVESTIG		ABZWIER	YAW SRW PAYS/OBC ENABLE	82	96,17	-4		
ASSESSION STERALATION SH & CLOSED/OPEN SG-7 1 1	•	ABSWHEN	SKEW SRW PAYS/OBC ENABLE	83	96,77			
ABSESUB ABSESUB ABSESUB ABSESUB ABSESUB ABSESUB ABSESUB ABSESUB ABSESUB ARCA-16 ATRUARATION SULPER B-0 96,77 1		ABSPSWA	SEPARATION SH A CLOSED/OPEN	84	6,77	-		
ATMURANG IN CHANKEL PADD 01: ATMURANG IN CHANKEL PADD 01: B0 96,72 1 ATMURANG IN CHANKEL C BACKE LOW/HIGH B1 96,72 1 ATMURANG IN CHANKEL C BACKE LOW/HIGH B1 96,72 1 ATMURANG IN CHANKEL C BACKE LOW/HIGH B3 96,72 1 ATMURANG IN CHANKEL C BACKE LOW/HIGH B3 96,72 1 ATMURANG IN CHANKEL B POWER ON/OFF B6 96,72 1 ASTIPM RIVE THAN I POWER ON/OFF B6 96,72 1 ASTIPM RIVE TOWER ON/OFF B6 96,72 1 ASTIPM RIVE THAN I POWER ON/OFF B1 97,72 1 ATMURANG THAN I POWER ON/OFF B2 97,72 1 ATMURANG THAN I POWER ON/OFF B2 97,72 1 ACSHAPI GSA THEOUT/BO THEOUT B4 97,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THOOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THOOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THEOUT/BO THEOUT B2 98,72 1 ACSHAPI GSA A THER THOOUT B2 98,72 1 ACSHAPI GSA A THER THOOUT B2 98,72 1 ACSHAPI GSA A THER THOOUT B2 98,72 1 ACSHA		ABSPSWB	SEPARATION SW B CLOSED/OPEN	85	96,77	-		
AIRUNARG BILEVEL, WORD OI; AIRUNARG BLIEVEL, WORD OI;			NOT USED	26-7	96,77			
AIRWARD RU CHANKEL A RAKGE LOW/HIGH B0 96,72 1	MACS-16		BILEVEL WOLD 01:					02-32
AIRUCRMG IRU CHANNEL B RANGE LOW/HIGH AIRUCRMG IRU CHANNEL B POWER ON/OFF AIRUCPUR IRU CHANNEL B POWER ON/OFF AIRUCPUR IRU CHANNEL B POWER ON/OFF AIRUCPUR IRU CHANNEL B POWER ON/OFF ASTZPHR HIST I POWER ON/OFF ASTZPHR HIST I POWER ON/OFF AATANIPUR TAM I POWER ON/OFF AAAAZPWR TAW I THROUT/WO TIMEOUT ACSMATH CSM A THROUT/WO TIMEOUT ACSMATH CSM A THROUT/DEFANALED ACSMATH CSM A		AIRUARNC	IRU CHANNEL A RANGE LOW/HIGH	9	96,72	-		02-32
AIRUPEMS INU CHANKEL C RAKGE LOH/HIGH AIRUPEMS INU CHANKEL B POWER ON/OPF AIRUPEMS INU CHANKEL B POWER ON/OPF AIRUPEMS INU CHANKEL B POWER ON/OPF AIRUPEMS INU CHANKEL C POWER ON/OPF AIRUPEMS INU CHANKEL C POWER ON/OPF B—5 96,72 1 B—5 96,72 1 B—5 96,72 1 B—5 96,72 1 B—6 96,72 1 B—7 97,72 1 B—7 97,72 1 B—7 97,72 1 AAAA LAUKHI RODE A PENER ON/OPF AAAA A POHER ON/ACE D POWER ON B—9 97,72 1 AAAA A LAUKHI RODE A PENEROT/HO TIMEOUT B—7 97,72 1 BACSHATM CSM A TIMEOUT/HO TIMEOUT B—7 97,72 1 B—7 96,72 1 B—7 97,72 1	-	AIRUBRNG		1-8	96,72	-		02-33
ATRUNCHS IRU CHANKEL A POWER ON/OFF ATRUPENT IRU CHANKEL C POWER ON/OFF ATRUPENT IRU CHANKEL C POWER ON/OFF ASTIPWR FIRST I POWER ON/OFF ATAMIPWR TAM I POWER ON/OFF ACSHAFT ACHIED ATAMIED AT		LIRUCRNG	RANCE	B2	96,72	-		02-34
AIRUBPER IRU CHANNEL B PONER ON/OFF ASTIDEM FHAIL IN CHANNEL C PONER ON/OFF ASTIDEM FHAIL TOWER ON/OFF ASTIDEM FHAIL POWER ON/OFF ASTIDEM FHAIL POWER ON/OFF ATAMIPER TAM I POWER ON/OFF AAANEDER TAM I POWER ON/OFF AAANED SAIROI S/A KNDEX I STATUS SAIROI S/A KNDEX I STATUS SAIROI S/A KNDEX I STATUS ACSHATH CSM A THER THEOUT/BO THEOUT ACSMATH CSM A THER THEOUT/BO THEOUT ACSMATCH CSM A THER THEOUT/BO THEOUT ACSMATH CSM A THE	2-	AIRUAPWR	IRU CHAMNEL A POWER ON/OPF	B3	96,72	-		02-35
ATRUCPAR IRU CRANKEL C POWER OH/OPP ASTINAR FRET 1 POWER OH/OPP ASTINAR FRET 1 POWER OH/OPP B——6 96,72 1 ALAMIPAR THST 2 POWER OH/OPP ATAMIZPHR TAN 1 POWER OH/OPP AANGEDP ACE A POWER OH/OPP AANGEDP ACE A POWER OH/ACE B POWER OH AANGED S/A INDEX 2 STATUS ACSMATH CSM A THERE TIMEOUT/MO TIMEOUT ACSMATH CSM A THERE TIMEOUT/MO TIMEOUT ACSMATH CSM A THERE THEOUT/MO TIMEOUT ACSMATH CSM A THERE THEOUT/MO TIMEOUT ACSMATH OSM B THENDED/GRABLED ACSMATH OSM A THENDED/GRABLED ACSMATH OSM ATREEL ENABLED/DISABLED ACHED ACHED TAN WHEEL ENABLED/DISABLED ACHED ACHED TAN ACHED TAN ACHED TAN ACHED TAN ACHED T	1	AIRUBPUR	IRU CHANNEL B POWER ON/OPF	1	21,96	~		02-36
ASTIPMR PHST 1 POWER ON/OFF AST2PMR PHST 2 POWER ON/OFF BLEVEL WORD D 02: ATAM1PWR TAM 1 POWER ON/OFF ATAM2PWR TAM 2 POWER ON/OFF ALANDER TAM 2 POWER ON/OFF ACSHATH CSH A INDEX 2 STATUS ACSHATH CSH A TIMEX TIMEOUT/BO TIMEOUT ACSHATH CSH A TIMER TIMEOUT/BO TIMEOUT ACSHATH CSH A THEIR TIMEOUT/BO TIMEOUT ACSHATH CSH A INHIBITED/ENABLED ACSHATH CSH A INHIBITED/ENABLED ACSHATO ACSHAED CSH B INHIBITED/ENABLED ACSHAED SKEW WHEEL ENABLED/DISABLED ALWED NOLL WHEEL ENABLED/DISABLED ALWED SKEW WHEEL ENABLED/DISABLED ALWES SKEW WHEEL SKEW SKEW SKEW SKEW SKEW SKEW SKEW SKEW	34	AIRUCPAR		2-2	96,72	-		02-37
AST2PWR FHST 2 POWER ON/OFF BILLEYEL BODD 02: ATAM1PWR TAN 1 POWER OH/OFF AAONEDOFF ACB A POWER OH/OFF AAONEDOFF ACB A POWER OH/OFF AANOEDOFF ACB A POWER OH/OFF ALMA LAUNCH FODZ A YES/HO SAIRD1 ACSHATH CSM A THERE THEOUT/MO THEOUT ACSHATH CSM A THERE THEOUT/MO THEOUT ACSHATH CSM A THERE THEOUT/MO THEOUT ACSHATH SAIRD1 ACSHATH SAIRD1 ACSHATH ACSHATH SAIRD1 ACSHATH	_	ASTIPHR	PHST 1 POWER ON/OFF	99	96,72	-		02-38
BILEVEL BORD 02: ATAMIPWR TAN I POWER ON/OPF B0 97,72 1 AAONDOPP AGE A POWER ON/OPF B1 97,72 1 AAONDOPP AGE A POWER ON/OPF B1 97,72 1 AAONDOPP AGE A POWER ON/OPF B2 97,72 1 AAND OF A ROBE ON ON OF B3 97,72 1 SAIND		AST2PWA	PHST 2 POWER ON/OFF	B7	96,72	-		02-39
ATAMIPAR TAN 1 POSTER OH/OFF ATAMIPAR TAN 1 POSTER OH/OFF AAONEDOFF AGE A POSTER OH/AGE B POSTER ON AAONEDOF AGE A POSTER OH/AGE B POSTER OH AAONEDO S/A INDEX 2 STATUS AGSHATH GSH A THERE THEROUT/NO TIMEOUT AGSHATH GSH A THERE ENABLED/DISABLED AGSHATH GSH A HHEEL ENABLED/DISABLED AGSHATH GSH A HIELE CARP/RO GSH A THE GSH A HIELE GSH A HIEL	HACS-17		BILEVEL MORD 02:					02-64
AAAA2PUR TAM 2 POGUER OH/OFF AAAAA2A LAUHCH FODG A TES/HO SAIRO2 S/A INDEX 1 STATUS SAIRO2 S/A INDEX 2 STATUS SAIRO2 S/A INDEX 2 STATUS SAIRO2 S/A INDEX 2 STATUS ACSHATH CSH A THER THEOUT/HO TIMEOUT BILEVEL WORD 03: ACSHATH CSH A THERE TIMEOUT/HO TIMEOUT ACSHAED CSH BIRHIBITED/ENABLED ACSHAED CSH BIRHIBITED/ENABLED AXWHED FITCH WHEEL ENABLED/DISABLED AXWHED TAW WHEEL ENABLED/DISABLED AXWHED TAW WHEEL ENABLED/DISABLED ASVHED SKEW WHEEL ENABLED/DISABLED ASVHED SKEW WHEEL ENABLED/DISABLED B5 99,72 1 ACSHATH ACSHATH ACSHATH AND AND AND ASSHATH ARIUMATE RIU 02 MATE STANDBY 1/0FF ARRUND RIU 02 BAT STANDBY 1/0FF ABCOHPAZ ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77		ATAMI PWR	TAN 1 POWER ON/OFF	9	97,72			02-64
AANEBOPP ACE A POTER OH ACE B POTER ON ALMA LAUNTH PODE A TES/NO SAIND2 SAIND2 SAIND2 SAIND2 SAIND2 SAIND2 ACSHATH CSM A THER TIMEOUT/NO TIMEOUT BC-5 97,72 1 ACSHATH CSM A THER TIMEOUT/NO TIMEOUT BLEVEL WORD 03: BLEVEL WORD 03: ACSHATO CSM A THER TIMEOUT/NO TIMEOUT ACSMATH BLEVEL WORD 03: BC-7 97,72 1 ACSMATH ACSMATH CSM A THER TIMEOUT/NO TIMEOUT BC-5 97,72 1 ACSMATH ACCSMATH ACCSMAT		ATAM2PUR	TAM 2 POULR OH/OFF	I	97,72	-		05-65
ALMA LAUNCH RYDE A YES/HO SAIRD1 6/A IRDEX I STATUS SAIRD2 6/A IRDEX I STATUS SAIRD2 6/A IRDEX 2 STATUS ACSHATH CSA A TIERE TIREOUT/HO TIMEOUT ACSHATH CSA B TIEZE TIREOUT/HO TIMEOUT BILEVEL WORD 03: ACSHATO CSA A IRHIBITED/ERABLED ACSHAED CSA B IRHIBITED/ERABLED ACSHAED CSA B IRHIBITED/ERABLED ACSHAED ROLL WHEEL ERABLED/DISABLED AXWHED FITCH WHEEL ERABLED/DISABLED AXWHED SKEW WHEEL ERABLED/DISABLED ASWHED SKEW WHEEL ERABLED/DISABLED ASWHED SKEW WHEEL ERABLED/DISABLED ASWHED SKEW WHEEL ERABLED/DISABLED ASWHED SKEW WHEEL ERABLED/DISABLED B5 98,72 1 ASWHED SKEW WHEEL ERABLED/DISABLED ASWHED SKEW WHEEL ERABLED/DISABLED B5 98,72 1 ASWHED SKEW WHEEL ERABLED/DISABLED ASWHED SKEW WHEEL ERABLED/DISABLED B5 98,72 1 ASWHED SKEW WHEEL ERABLED/DISABLED B6 98,72 1 ARIUMATE RIU 02 MATE STANDBY 1/0FF B5 96,13 1 ABCOMPW2 ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77		AAONBOPP	ACE A POSTER OR/ACE D POSTER ON	02	97,72	-		02-66
SAREDI S/A INDEX I STATUS SAREDI S/A INDEX I STATUS SARIND S/A INDEX I STATUS SARIND S/A INDEX I STATUS SASIND S/A INDEX I STATUS ACSHATH CSM A TIMER TIMEOUT/NO TIMEOUT ACSHATH CSM B TIMER TIMEOUT/NO TIMEOUT BILEVEL WORD 03: ACSHAT CSM A INHIBITED/ENABLED ACSHAED CSM B INHIBITED/ENABLED ACSHAED CSM B INHIBITED/ENABLED ACSHAED SCM WHEEL ENABLED/DISABLED AXWHED ROLL WHEEL ENABLED/DISABLED AXWHED SKEW WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED B3 98,72 1 ASWHED ASWHED ASWHED SKEW WHEEL ENABLED/DISABLED B3 96,72 1 ASWHED ASWHED ASWHED SKEW WHEEL ENABLED/DISABLED B3 96,72 1 ASWHED ASWHED SKEW WHEEL ENABLED/DISABLED B3 96,72 1 ASWHED A		ALMA	LAUNCH KODZ A YES/NO	B-3	97,72	-		02-67
ACSMATH CSM A THERE TIRECOUT/NO TIMEOUT B——5 97,72 1 ACSMATH CSM A THERE TIRECOUT/NO TIMEOUT B——6 97,72 1 ACSMATH CSM A THERE TIRECOUT/NO TIMEOUT B——7 97,72 1 BILEVEL WORD 03: B——7 97,72 1 ACSMAT CSM A INHIBITED/ENABLED B——9 98,72 1 ACSMAT CSM B INHIBITED/ENABLED B——9 98,72 1 ACSMAT CSM B INHIBITED/ENABLED B——2 98,72 1 AXWHED ROLL WHEEL ENABLED/DISABLED B——9 98,72 1 AXWHED RICH WHEEL ENABLED/DISABLED B——9 98,72 1 AXWHED SKEW WHEEL ENABLED/DISABLED B——9 98,72 1 ALWE HODE BY ES/NO B——9 98,72 1 ALWE HODE BY ES/NO B——9 98,72 1 ARIUTH RIU OZ MATE STANDBY 1/0FF B——6 98,72 1 ARIUTH SIU OZ MATE STANDBY 1/0FF B——6 98,73 1 ARIUTH RIU OZ MATE STANDBY 1/0FF B——7 96,13 1 ABCOMPAZ ACE B 24 BIT COMP/PAYS NOBD 2 SO—7 97,77		SAIRDI	S/A INDEX 1 STATUS	7	97,72	-		02-68
ACSMATH CSM A THER TREGOT/NO TIMEOUT ACSMATH CSM B THER THEOUT/NO TIMEOUT ACSMAT CSM B THERE THEOUT/NO TIMEOUT ACSMAT CSM A THERETEP/ENABLED ACSMAT CSM A THEIRTEP/ENABLED ACSMAT CSM A THEIRTEP/ENABLED ACSMAT CSM B ITHIBITED/ENABLED ACSMATC CSM A THEOLED/DISABLED B2 98,72 1 ACSMATC CSM B ITHIBITED/ENABLED B2 98,72 1 ACSMATC CSM B ITHIBITED/ENABLED ACSMATC CSM B ITHIBITED/ENABLED B3 98,72 1 ACSMATC CSM B ITHIBITED/ENABLED ACSMATCH CSM B ITHIBITED/ENABL		SA11702	S/A INDEX 2 STATUS	85	97,72	p=4 -		05-69
ACSMBTM CSM B TIKER TIMEOUT/NO TIMEOUT BILGVEL WORD 03: ACSMA 7 CSH A INHIBITED/ENABLED ACSMAD CSM B IRHIBITED/ENABLED ACSMED CSM B IRHIBITED/DISABLED ACMIED PITCH WHEEL ENABLED/DISABLED ACMIED AND WHEEL ENABLED/DISABLED ACMIED SKEW WHEEL ENABLED/DISABLED ACMIED SKEW WHEEL ENABLED/DISABLED ACMIED SKEW WHEEL ENABLED/DISABLED ACMIED SKEW WHEEL ENABLED/DISABLED B4 98,72 1 ACMIED B3 98,72 1 ACMIED SKEW WHEEL ENABLED/DISABLED B5 98,72 1 ACMIED SKEW WHEEL ENABLED/DISABLED B6 98,72 1 ACMIED SKEW WHEEL ENABLED/DISABLED B6 98,72 1 ACMIED SKEW WHEEL ENABLED/DISABLED B7 96,13 1 ABCOHPAZ ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77		ACSHATH	CSM A TIMER TIMEOUT/NO TIMEOUT	9	97,72	~		02-20
BILEVEL WORD 03: ACSMA 7 CSM A INHIBITED/ENABLED B-0 98,72 1 ACSMAD CSM B INHIBITED/ENABLED B-1 98,72 1 ACSMED CSM B INHIBITED/ENABLED B-2 98,72 1 AXWHED ROLL WHEEL ENABLED/DISABLED B-3 98,72 1 AXWHED YAW WHEEL ENABLED/DISABLED B-3 98,72 1 ASWHED SKEW WHEEL ENABLED/DISABLED B-4 98,72 1 ASWHED SKEW WHEEL ENABLED/DISABLED B-4 98,72 1 ALMS LAURCH WORE B TES/NO B-6 98,72 1 ARIUP RIU 02 MATE STANDBY 1/0FF B-6 96,13 1 ARIUP RIU 02 BAA B-7 96,13 1 ABCOMPAZ ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77	- !	ACSMBTM	CSM B TIRER TIMEOUT/BO TIMEOUT	B1	97,72	-		02-71
ACSHA7 CSH A INHIBITED/ENABLED ACSHAED CSH E INHIBITED/ENABLED ACSHBED CSH E INHIBITED/ENABLED ACHHED FOLL WHEEL ENABLED/DISABLED AZWHED FOLL WHEEL ENABLED/DISABLED ASWHED FOLCH WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED ALWB LAUWCH MODE B TES/HO B5 98,72 1 ALWB BLIEVEL WORD 04: ARIUMATE RIU 02 MATE STAMDBY 1/0FF ARRUND RIU 02 BAA ABCOMPW2 ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77	MACS-18		BILEVEL WORD 03:	1	;	,		05-20
ACSMED CSM B IMMBITED/ENABLED ACMHED FOLL WHEEL ENABLED/DISABLED AZWHED FOLL WHEEL ENABLED/DISABLED AZWHED FOLK WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED ALMS LAINCH MODE B YES/HO BILEVEL WORD 04: ARIUMATE RIU 02 MATE STANDBY 1/OFF ABCOHPUZ ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77		ACSHA" 2	CSA A INHIBITED/ENABLED		98,72	- ,		02-20
AXMHED ROLL WHEEL ENABLED/DISABLED AYMIED PITCH WHEEL ENABLED/DISABLED AZMED YAM WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED ALMS LAUKCH MODE B YES/HO BILEVEL WORD 04: ARIUMATE RIU 02 MATE STANDBY 1/0FF ARRUID ARRUID ARROHPUZ ACE B 24 BIT COMF/PAYS WORD 2 SO-7 97,77		ACSMBED	CSM B IRHIBITED/ENABLED		98,72			02-87
AYWIED PITCH WHEEL ERABLED/DISABLED AZWHED YAW WHEEL ENABLED/DISABLED ASWHED SKEW WHEEL ENABLED/DISABLED ALMS LAUNCH HODES B YES/HO BILEVEL WORD 04: ARIUMATE RIU 02 MATE STANDBY 1/0FF ARRUID ABCOMPW2 ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77		AIHHED	ROLL WHEEL EMAELED/DISABLED	82	98,72			0298
AZWHED YAW WHEEL CHABLED/DISABLED ASWHED SKEW WHEEL CHABLED/DISABLED ALMS LAUNCH WORE B YES/NO BILEVEL WORE 04: ARIUMATE RIU 02 MATE STANDBY 1/0FF ARRUID RIU 02 B/A ABCOMPW2 ACE B 24 BIT COMF/PAYS WORD 2 SO-7 96,13 1	•.,-	AYHIIED	PITCH WHEEL ENABLED/DISABLED	B3	98,72	1		05-59
ASWHED SKEW WHEEL RHADLED/DISADLED B5 98,72 1 ALMS LAUNCH MODE B YES/HO B6 98,72 1 BILEVEL WOED 04: ARIUMATE RIU 02 MATE STANDBY 1/0FF B6 96,13 1 ARRUID RIU 02 B/A B-7 96,13 1 ABCOMPW2 ACE B 24 BIT COMP/PAYS WOED 2 50-7 97,77		AZKRZD	YAN WHEEL CHABLED/DISABLED	9	98,72	~		02-100
ALMB LAUNCH MODE B YES/NO B-6 98,72 1 BILEVEL WORD 04: ARIUMATE RIU 02 MATE STANDBY 1/OFF B-6 96,13 1 ARIUD RIU 02 B/A B-7 96,13 1 ABCOMPW2 ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77		ASWHED	SKEW WHEEL RHADLED/DISABLED	S-1	98,72	~		02-101
BILEVEL WOED 04: ARIUMATE RIU 02 MATE STANDBY 1/OFF ARIUID RIU 02 B/A B-7 96,13 1 ABCOMPW2 ACE B 24 BIT COMP/PAYS WOED 2 SO-7 97,77		ALKB	LAUNCH MODE B YES/HO	9-0	98,72	-		02-102
RIU 02 MATE STANDBY 1/OFF B6 96,13 1 RIU 02 B/A B7 96,13 1 ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77	MACS-19		BILEVEL WORD 04:					02-40
ACE B 24 BIT COMP/PAYS WORD 2 SO-7 97,77		ARIUMATE	RIU 02 MATE STANDBY 1/OFF	9-9	96,13	~		02-46
ACE B 24 BIT COMP/PAYS WORD 2 SO-7		ARIUID	RIU 02 B/A	87	96,13	-		02-47
		ABCOMPW2	ACE B 24 BIT COMP/PAYS WORD 2	S-7-	11,16			

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NIO-CE		02-16	02-17	02-18	02-19	02-20	02-21	02-22	02-23	02-26	02-25	02-26	02-27	02-28	02-29	02-30	02-31	02-54	02-55	05-40	02-41	02-42	02-43	**	**-70	02-45	;	75-27	02-48	}	02-49	03~20	}	02-51	25-56	02-57	02-58	02-59
Z Z		05	05	92	05	05	05	07	05	05	05	05	05	05	0	0	07	05	05	6	05	05	05	-	7	05	-	Š	6	-	Ċ	1 02.		6	- 6 -	05	05	8
EATE		-	-	-	-	-4	-	-	-	-	~	-	-	-	-	-	-4		,-4	,-4 ,	,	,	- ;	128	178	-	128	→ -	٠.	126	- ;	27 7	128	~ €	971			
001, ROW	98,77	96, 41	96,42	97,41	97,42	97,53	89.86	97.07	96,07	98,75	96,78	80,88	99,66	96,73	96,75	96,75	97,60	111'85	93,100	96,45	97,45	98,45	97,73	23	24,14	97,78	25	97,12	97.14	69	97,100	62 97, 101	19	97,102	65 65 65	97.63	98.43	99.96
TYPE	50-7	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASG	PASS	PASS	PASS	PASS	PASS	PASS	Pass	ALOG	ALOC	ALOC	ALOC	ALOC	ALOC	8	AFFOR	ALOC	;	ALOC A OC	3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		ALOC	ALOC		ALOS	ALOC	ALOC	ALOG	ALOS
TLM PUBCTION DESCRIPTION	ACE 8 24 BIT COMP/PAYS WORD 3	BOLL SRU TEMP	FITCH SAH TEMP	TAU SRN TEMP	SKEH SEN TEMP	OPTICAL BENCH TEMP (FRST)	PSU TEXP	PSS TEMP	RIU 02 TEMP	ACE A POSER COEDITIONER TEMP	ACE B POSER COEDITIONER TEMP	SRU DRIVE ELECTEDHICS TENT	TORQ DRIVE RECCTRONICS TEMP	IRU CHAMMEL A YEMP	INU CLIABAZI, B TEMP	IRU CHAHREL C TEMP	OPTICAL DESCH TEMP (12U)	Pust 1 Text		4	4	IRU CHABITEL C REG VOLTACE	IRU CHAHELL A KOTOR CURRENT	TON ALLEGE TO BE ACCOUNT OF THE PARTY AND THE PARTY OF TH	INU CAMBREL B ROLOS CALACRI	IAU CHAHREL C MOTOR CURRENT		PUST A STAR LETERASITY	CSS I PITCH POSITION FREEZ		CSS 1 TAW POSITION ERROR	CSS 2 PITCH POSITION EDROR		CSS 2 YAM POSITION ERROR	TAM 1 BOIL BEENS STORAL	TAM 1 PITCH EREOR SICEAL		. ~
ACRORYM	ABCOMP43	AXIFILTICE	ATCHLTHP	AZYHLTMP	ASWELTRP	ASTOBTMP	APSUTMP	APSSTMP	ARIUTHP	AAPARCDT	ABPERECOT	ALFIDR CL.	ATQUEEL1.	AIRUATHP	AIRUSTNE	AIRUCTMP	AIRUO3TP	ASTITEMP	ASTZTEMP	AIRUAVLT	AIRUSVLT	AIRUCVLT	AIRUANTI		ALEUDELL	AIRUCHTI		ASTINAC	ACSS17		AC8312	ACSS2Y		AC882Z	ATAMIX	ATAMIT	ATAMIZ	ATA/2X
USER ID		14CS-20	HACS-21	HACS-22	ACS-23	XACS-26	MACS-25	KACS-26	HACS-27	ACS-28	KACS-29	KACS-30	4ACS-31	KAC3-32	18CS-33	HACS-34	MACS-35	MACS-36	FACS-37	MACS-38	ACS-39	ACS-40	59CS-41	4.4		HACS-43	;	440048	WACS-66	!	MACS-47	KACS-68	:	4AC8-49	05-504)	18-53	HACS-52	KACS-53

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Address RIU-ch	02-60 02-61 02-72	02-73	02-74	02-75	02-76	-1-20	02-82	02-83	02-84	02-85	02-86	02-87	02-104		02-102	02-106	02-107	02-108	02-100	02-110	02-111
æ	,			• -		• -		٠.	4 ,	-	-				-	-		-	.	- .	
SPP'L RATE		128 1 1	1 - 6	7 7	- 6	3 - 6	7 7	2 2 5	77	2 2 2	128	128 2	120	128	128	128	7	128	2 2 2	877	128 128
MTX LOC COL, ROM	97,44 98,44 96,06	26 96,66 27	97,06 28	97,66	90,86	98°5	96,39	97,39	98,39	61 96,40	22 97,40	80 98,40	82	28.5	98,32 57	98,63	98,34	59 96,46	32 96,36	96,37	96,38 55,38
эсиг Түре	ALOC ALOC ALOC	ALOC	ALOG	ALOC	ALOG	ALOG	ALOG	ALOG	ALOG	ALOG	ALOG	ALOC	81.00		ALOG	ALOG	ALOG	ALOG	ALOG	ALOG	ALOG
TLM PUNCTION DESCRIPTION	TAM 2 PITCH ERROR SIGHAI TAM 2 YAW ERROR SIGNAL ROLL MAC TORQ DRIVE A	ROLL MAG TORQ DR.VE B	PITCH MAG TGRQ DRIVE A	PITCH MAG TORQ DRIVE B	TAH MAG TORQ DRIVE A	TAH MAG TORQ DRIVE B	IRU ROLL RATE 1	IRU PITCH EATE 1	IRU YAW RATE 1	IRU ROLL RATE 2	IRU PITCH BATS 2	IRU YAW RATE 2	BOIL SAN DRIVE CONTROL		PITCH SRW DRIVE CONTROL	taw sru daive control	SKEM SRW DAIVE CONTROL	BOLL SRW MOTOR VOLTS	PITCH SRW MOTOR VOLTS	YAN SRU MOTJR VOLTS	SKEW SRW MOTOR VOLTS
АСВОИТИ	ATAM2Y ATAM2Z AXHAGD&A	AXMAGDEB	AYMAGDBA	AYMACDRB	AZMACDRA	AZHAGDBB	AXBATE1	ATRATE1	AZRATB1	AXRATE2	AYRAT82	AZBATE2	AYLHINGUA		ATHIDRVA	AZWHDRVA	ASVHDRVA	AXXHDRVB	AYMIDBVB	AZVHDRVB	ASWHDRVB
USER ID	HACS-54 HACS-55 HACS-56	MACS-57	MACS-58	MACS-59	MACS-60	MACS-61	MACS-62	KACS-62	MACS-64	MACS-65	MACS-66	MACS-67	84-874M		MACS-69	MACS-70	MACS-71	MACS-72	MACS-73	MACS-74	MACS-75

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	ACROMICA	ILS FUNCTION DESCRIPTION	3	Wat 1200	RATE	×	RTU-CH
MACS-76	AXTACHA	ROLL SRW TACH A	ALOG	96,31	7	٠.	02-112
MACS-77	AYTACKA	PITCH SRW TACH A	ALOG	96,32	2 2 2	. .	02-113
MACS-78	AZTACHA	TAW SRW TACH A	AL OC	95,63	7		02-114
MACS-79	ASTACHA	SKEW SRW TACH A	ALOG	46,34 96,34	128	-	02-115
MACS-80	AXTACHB	ROLL SRW TACH B	ALOG	50 97,31	92 7	٠,	02-116
HACS-81	AYTACHB	PITCH SRW TACH B	ALOG	45 97,32	ģ 7 <u>2</u>		02-117
HACS-82	AZTACHB	YAW SRW TACH B	ALOG	97,63	7 7		02-118
MACS-83	ASTACHB	SKEW SRW TACH B	ALOG	97,34	7 7 9		02-119
MACS-84	APSVOLT	ACE A/B +5V REG VOLTAGE	ALOC	96,91	9 -	4	02-123
MACS-85	APISVOLT		ALOG	97,91	,-4		02-124
KACS-80	ANIOVOLT	ACE A/B -13V MEG VOLIAGE ACE A/B +3RV NPC VOLTAGE	ALOS ALOS	76,96			02-123
HACS-88	AAN18VLT		ALOG	97,92	. =4		02-122
MACS-89	ABN18VLT		ALOG	97,93	-		02-126
MACS-90	AAXTAHCP	A TAX	ALOG	80,98			02-78
HACS-91	AAYTAKCE	ACE A TAM PITCH COMPENSATED SIGNAL	AL06	96,09	 4		02-79
MACS-92	ABYTAKCP	e TAN	VI 05	97,08	٠.		02-89
MACS-94	ABYTANCP	B TAN	ALOG	97,09			02-120
KACS-95	ABZTAMCP	B TAM	ALOG	97,10	-		02-121
MACS-96	AIBUXPN	ACE A IRU ROLL POSITION	ALCS	96,15 75	4 128	~	05-80
, MACS-97	AAIRUYPN	ACE A IRU PITCH POSITION	ALOG	98,21	4 661	-	02-91
MACS-98	AAIRUZPN	ACE A IRU YAW POSITION	ALOG	98,25	4	•	02-92
		:		43	128		
MACS-99	ABIRUXPN	ACE B IRU ROLL POSITION	ALOC	97,15	128	_	02-93
MACS-100	ABIRUYPH	ACE B IRU PITUR POSITION	ALOC	98,22	4	•	02-94
M4FG-101	ARTHITE	ACE B IBH YAW POSITION	ALOS	105 98.26	126 4	ped	02-95
				107	128	~	}

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MODULAR POWER SUBSYSTEM

Table 2-27 MPS

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	MPS-01 PB1TSWA PTH18PB PTH18PB PTH18PB PTH18PB PBULB PRULB PRULB PRULB PRULB	STATUS WORD 1: BAIT 1 TH SW E/D STATUS A RSET/SET HTR B THMST BYPASS STAT B RSET/SET HTR A THMST BYPASS STAT B RSET/SET HTR A THMST BYPASS STAT B RSET/SET PRU "M" AESET/SET PRU "W" AESET/SET PRU "W" RSET/SET PRU "W" RSET/SET STATUS WORD 2: BAIT 2 TH SW E/D STATUS A RSET/SET HOT USED	SCML TYPE 8-0 8-1 8-1	MTZ LOC COL, ROM	SAPL	=	ADDRESS RIU-CH
FRITSH	NPS-01 PB1TSWA PTH2PB PTH1PPB PTH1PPB PH0.4E PBVLC PBVCC PBV	STATUS WORD 1: BAIT 1 TH SW E/D STATUS A RSET/SET HTR B THMST BYPASS STAT B RSET/SET HTR A THMST BYPASS STAT B RSET/SET AUTO HTR ON/OPF STATUS B RSET/SET PRU "M" AESET/SET PRU "W" RSET/SET PRU "W" RSET/SET STATUS WORD 2: BAIT 2 TH SW E/D STATUS A RSET/SET HOT USED	2777 2770 2770	COL, KON	gvig	E	KIU-CE
PRITGATE PRITGATE PRINCE	MPS-02	STATUS WORD 1: BATT I TH SW E/D STATUS A RSET/SET HTR B THMST BYPASS STAT B RSET/SET HTR A THMST BYPASS STAT B RSET/SET AUTO HTR ON/OPF STATUS B RSET/SET PRU "M" AESET/SET PRU "W" RSET/SET PRU "W" RSET/SET BRU "VA RSET/SET BRU "VA RSET/SET HTW "W RSET/SET STATUS WORD 2: BATT 2 TH SW E/D STATUS A RSET/SET	8 -1 8 -1 8 -3				
PRINCESAM SATT TH SM & LO STATUS A BRET/SET S-0 96,50	HPS-02	HAT B THAST BYPASS 37AT B RSET/SET HTR A THAST BYPASS STAT B RSET/SET AUTO HTR ON/OPP STATUS B RSET/SET PRU "W" RSET/SET PRU "V" RSET/SET PRU "VA RSET/SET RRU "VA RSET/SET BRU "VA RSET/SET NOT USED	8 -1 -0 8 -1 -1 8 -1 -1				03-00
FILLER HTR & THACT BYFASS STAT B SERT/SET S-1 96,50	MPS-02	HTR B THMST BYPASS 37AT B RSET/SET HTR A THMST BYPASS STAT B RSET/SET AUTO HTR ON/OPF STATUS B RSET/SET PRU "W" ACSET/SET PRU "VS" RSET/SET PRU "VS" RSET/SET STATUS WORD 2: BATT 2 TH SW E/D STATUS A RSET/SET NOT USED	8 -1 8 -2 8 -3	8.36	-4		
PAUNTRE PUTA A THOST STATE BAET/SET S-2 96,50 1	MPS-02	HTR A THMST BYPASS STAT B RSET/SET AUTO HTR ON/OPP STATUS B GSET/SET PRU "W" AESET/SET PRU "VA "RSET/SET PRU "VA "RSET/SET STATUS WORD 2: BATT 2 TH SW E/D STATUS A RSET/SET NOT USED	s2 83	96,50			
PRUICER PAULTO HE NATO HE NOTORY STATUS B RSET/SET S-4 96,50 1	MPS-02	AUTO HTR OH/OPP STATUS B GSET/SET PRU "H" AESET/SET PRU "VC" RSET/SET PRU "VA RSET/SET PRU "VA RSET/SET STATUS WORD 2: BATT 2 TH SW E/D STATUS A RSET/SET HOT USED	83	96,50			
PRINCE FRU "Y" RESTY/SET PRIVA FRU "Y" RESTY/SET PRU A RESTY/SET PRU "A RESTY/SET PRU "A RESTY/SET S=-5 96,50 11 PRU "A RESTY/SET S=-6 96,50 11 PRU "A RESTY/SET S=-6 96,50 11 STATUS WORD 2: STATUS WORD 2: PRU "A RESTY/SET S=-7 96,50 11 STATUS WORD 2: PRU "A RESTY/SET MPS-02	PRU "M" AESEL/SET PRU "VG" RSET/SET PRU "VB RSET/SET PRU "VA RSET/SET STATUS WORD 2: BATT 2 TH SW E/D STATUS A RSET/SET HOT USED		96,50				
PRUCA PRU 'U' RSET/SET S5 96,50 1	MPS-02	PRU "VC" RSET/SET PRU "VB" RSET/SET PRU "VA RSET/SET STATUS WORD 2: BATT 2 TH SW E/D STATUS A RSET/SET HOT USED	88	96,50	-		
PBULB PRU ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	HPS-02	PRU "VB" RSET/SET PRU "VA RSET/SET STATUS WORD 2: BATT 2 TH SW E/D STATUS A RSET/SET NOT USED	S5	96,50	-4		
PBVLA PBVL	MPS-02	PRU "VA RSET/SET STATUS WORD 2: BAIT 2 TH SW E/D STATUS A RSET/SET NOT USED	S6	96,50	-		
PB2TSWA	MPS-02	STATUS WORD 2: BAIT 2 TH SW E/D STATUS A RSET/SET NOT USED	S7	96,50	~		٠
PROTESMA BATT 2 TH SW E/D STATUS A RSET/SET S=-0 97,50 1	MPS-03	BAIT 2 TH SW E/D STATUS A RSET/SET NOT USED		•			03-01
PUCKEY NOT USED	MPS-03	NOT USED	S-0	97,58	-		
PECCHRA BATT CHC RIT DYR RIU A DISARKED/ABHED S2 97,50 I PERCHE BATT 3 OFF CHARGE/ON CHARGE PRICHE BATT 3 OFF CHARGE/ON CHARGE PRICHE PRU TH" REST/SET	MPS-03		<u>81</u>	97,50	~		
PB3CHG	MPS-03	BATT CHG RLT DVR RIU A DISABARD/ARMED	82	97,50	-		
PRICHE P	MPS-03	BATT 3 OPF CHARGE/ON CHARGE	S3	97,50	-		
PRUICH	MPS-03	BATT 2 OFF CHARGE/ON CHARGE	8-8	97,50			
PRRUIG	MPS-03	BATT 1 OPF CHARGE/ON CHARGE	85	97,50			
PPBUIA PRU "IA" RSET/SET S-7 97,50 1	MPS-03	PRU "IB" RSET/SET	86	97,50	-		
PRAZED PRELAY ARRAY I CLOSED/OPEN S0 98.50 2	MPS-03	PRII "IA" RSPT/SFT	87	97,50	•		
PSAZPD PD RELY ARRY 2 CLOSED/OPEN S0 98,50 2		STATIS MORD 3:			•		03-02
PSAIPD PD RELAY ARRAY CLOSED/OPEH S1 98,50 2		PD RELAY ARRAY 2 CLOSED/OPEN	Š	98,50	7		}
PB3PD PD RELAY BATT 3 CLOSED/OPEN S2 96,50 2		PD RELAY ARRAY 1 CLOSED/OPEN	81	98,50	7		
PB2PD PD RELAY BATT 2 CLOSED/OPEN S5 98,50 2		PD RELAY BATT 3 CLOSED/OPEN	S2	98,50	~		
PB1PD PD RELAT BATT 1 CLOSED/OPEN 84 98,50 2 PB3OT BATT 3 TEMP HORMAL/OVER LIMIT \$5 98,50 2 PB3OT BATT 1 TEMP HORMAL/OVER LIMIT \$6 96,50 2 PB1OT BATT 1 TEMP HORMAL/OVER LIMIT \$6 96,50 2 FB1OT BATT 1 TEMP HORMAL/OVER LIMIT \$7 96,50 2 PB1CSWA BATT 3 TEMP WORD BATT 3 TEMP WORD BASET/BET \$0 96,51 1 PRINCED SATE WORD COMPUTER TOWN BATT/BORMAL B2 96,51 1 POSCTIM COMPUTER TOWN PALUNE/BORMAL B3 96,51 1 POSCTIM COMPUTER TOWN BATT/BORMAL B3 96,51 1 POSCTIM COMPUTER TOWN BLU A DISARMED/ARMED B3 96,51 1 PURARA HTA RLY DYR BLU A DISARMED/ARMED B5 96,51 1 PURARA HTA RLY DYR BLU A BYANGS B6 96,51 1 RATINSH WORD STATUS BLAN		PD RELAY BATT 2 CLOSED/OPEN	S3	98,50	7		
PBJOT BATT 3 TEMP HORMAL/OVER LIMIT \$5 98,50 2 PBJOT BATT 2 TEMP HORMAL/OVER LIMIT \$6 96,50 2 PBJOT BATT 2 TEMP HORMAL/OVER LIMIT \$6 96,50 2 STATUS 408D 4: \$7 98,50 2 PBJTSWA BATT 3 TEMP HORDER \$7 96,51 1 PHRUSB INSTRUMENT HORDER \$0.51 1 96,51 1 PCHONA COMPUTER FINER PAILURE/BOZHAL \$2 96,51 1 1 PCHONA COMPUTER FINER PAILURE/BOZHAL \$3 96,51 1 1 PCHONA COMPUTER FOR ELD SITURE/BOZHAL \$3 96,51 1 1 PCHONA COMPUTER FOR ELD SITURE/BOZHAL \$3 96,51 1 1 PURCHA HTARAM HTA RLY DVR RLU A DISARKED/ARKED \$5 96,51 1 PHARAM HTARAM HTA RLY DVR RLU A DVR RLU A DISARKED/ARKED \$6 96,51 1 PRITSWB BATT 3 TEML SW R/D STAUS B RSET/SET <td< td=""><td>PBIPD</td><td>PD RELAY BATT 1 CLOSED/OPEN</td><td>8</td><td>98,50</td><td>7</td><td></td><td></td></td<>	PBIPD	PD RELAY BATT 1 CLOSED/OPEN	8	98,50	7		
PBJOT BATT 2 TEMP HORMAL/OVER LIMIT 8—6 90,50 2 PBJOT STATUS HORMAL/OVER LIMIT \$5—7 98,50 2 STATUS HORMAL/OVER LIMIT \$5—7 98,50 2 PBJTSMA BATT 3 TIML BW PD STATUS A RSET/BET \$6—5 1 PHRUSB INSTRUCENT MODULE BUS B DISAB/ENAB \$6—5 1 PCHOLA COMPUTER TIMER POSTA/ROBHAL \$6—5 96,51 1 PCHOLA COMPUTER TIMER POSTA/ROSPAL \$6—5 96,51 1 PCHOLA COMPUTER TIMER POSTA/ROSPAL \$6—5 96,51 1 PPDACHA INSTR PUSZ/PER DED NIN A DISARKED/ARMED \$6—5 96,51 1 PUTABAA HTZ RLY DVR RLU A DISARKED/ARMED \$6—5 96,51 1 ROT USED STATUS WORD 5: \$6—5 96,51 1 RATIS SWAR BATT 3 TEML SW R/D STATUS B RSET/SET \$6—6 96,51 1 PBBITSWB BATT 3 TEML SW R/D STATUS B RSET/SET \$6—7 97,51 1 PRILSBPA HTR R THMST BYRASS STATUS A RSET/SET \$6—7 97,51 <td>PB30T</td> <td>BATT 3 TEMP HORMAL/OVER LIMIT</td> <td>85</td> <td>98,50</td> <td>7</td> <td></td> <td></td>	PB30T	BATT 3 TEMP HORMAL/OVER LIMIT	85	98,50	7		
PBIOT BATT TEMP HORMAL/OVER LIMIT S-7 98,50 2	PB20T	BATT 2 TEMP HORMAL/OVER LIMIT	9-8	98,50	7		
### STATUS #08D 4: ### PB3TSWA BATT 3 TH#L SW #C/D STATUS A RSET/BET # \$\text{8}\$\to 0 \text{96,51} 1 1	_	BATT 1 TEMP HORMAL/OVER LIMIT	37	98,50	7		
PBJTSWA BATT 3 THML SW E/D STATUS A RSET/SET	MPS-04	STATUS HORD 4:					03-03
PIHEUSB INSTRUCENT MODULE BUS B DISAB/ERAB 94,51 1	PB3TSWA	BATT 3 TIME SW E/D STATUS A RSET/SET	9	96,51	-		
PSIECHO SAFE MODE COMMAND SENT/HORMAL S-2 96,51 1	PIMEUSB	INSTRUMENT MODULE BUS B DISAB/RNAB	18	96,51			
PCKONA COMPUTER FOR E/D STATUS A RSET/SET 83 96,51 1 POBCTIM COMPUTER TIMER PAILURE/BOCHAL 84 96,51 1 PPDARMA INSTR PUSZ/PD R-D XIU A DISARKED/ARKED 85 96,51 1 PHTARMA HTZ RLY DVR RIU A DISARKED/ARKED 86 96,51 1 NOT USED STATUS WORD 5: 87 96,51 1 PB31SWB BATT 3 TEML SW R/D STATUS B RSET/SET 80 97,51 1 PB1ISWB BATT 3 TEML SW R/D STATUS B RSET/SET 81 97,51 1 PB1ISWB BATT 1 TEML SW R/D STATUS B RSET/SET 82 97,51 1 PTH2BPA HTR B THMST BYRASS STATUS A RSET/SET 83 97,51 1 PTH3BPA HTR A THMST BYRASS STATUS A RSET/SET 84 97,51 1	PSHXCKO	SAPE MODE COMMAND SENT/ROBHAL	82	96,51	,-		
POBCTIM COMPUTER TIMER FAILURE/GOTHAL S-4 96,51 1	PCKONA	COMPUTER MOII E/D STATUS A RSET/SET	83	16'96	-		
PPDARMA INSTR PUSE/PD R-D XIU A DISARKED/ARKED 65 96,51 1 PHTABAA HTZ RLT DVB RIU A DISARKED/ARKED 86 96,51 1 STATUS WOT USED STATUS B RSET/SET 96,51 1 PBJISWB BATT J HYL SW Z/D STATUS B RSET/SET 80 97,51 1 PBJISWB BATT J THAL SW Z/D STATUS B RSET/SET 81 97,51 1 PHISSPASS STATUS B RSET/SET 82 97,51 1 PHISPA HTR B THMST BYATUS A RSET/SET 83 97,51 1 PHISPA HTR A THMST BYATUS A RSET/SET 83 97,51 1	POBCTIM	COMPUTER TIMER PAILURE/GOSHAL	86	96,51	-		
PHTARMA HTZ RLY DVR RIU A DISARMED/ARMED 56 96,51 1 KOT USED STATUS WORD 5: PB3/55WB BATT 3 THAL SW E/D STATUS B RSET/SET 50 97,51 1 PB1/53WB BATT 1 THAL SW E/D STATUS B RSET/SET 52 97,51 1 PTH2BPA HTR B THMST BYPASS STATUS A RSET/SET 53 97,51 1 PTH3BPA HTR A THMST BYPASS STATUS A RSET/SET 53 97,51 1	PPDARMA	INSTR FUSE/PD R-D NIU A DISARKED/ARKED	85	96,51	-		
NOT USED STATUS WORD 5: STATUS B RSET/SET SU 97,51 1 PB1TSWB BATT 1 THELS W Z/D STATUS B RSET/SET S2 97,51 1 PTH2BPA HTR B THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S2 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S3 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S3 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S3 97,51 1 PTH1BPA HTR A THEST BYPASS STATUS A RSET/SET S3 97,51 1	PHTABAA	HTZ RLY DVR RIU A DISARMED/ARMED	9 5	16,31			
STATUS WORD 5: PB3/FSWB BATT 3 TEML SW E/D STATUS B RSET/SET SU 97,51 1 PB3/FSWB BATT 2 TEML SW E/D STATUS B RSET/SET S1 97,51 1 PB1/FSPA BATT 1 TEML SW E/D STATUS B RSET/SET S2 97,51 1 PTH/SPA HTR B THMST BYPASS STATUS A RSET/SET S3 97,51 1		NOT USED	87	96,51			
BATT 3 TEM. SW E/D STATUS B RSET/SET BATT 2 TEM. SW E/D STATUS B RSET/SET BATT 1 TEM. SW E/D STATUS B RSET/SET BATT 1 TEM. SW E/D STATUS B RSET/SET HTR B TEMST BFFASS STATUS A RSET/SET S-3 HTR A TEMST BFFASS STATUS A RSET/SET S-4	MPS-05	STATUS WORD 5:		, •			03-04
BATT 2 THAL SW E/D STATUS B RSET/SET S1 BATT 1 THAL SW E/D STATUS B RSET/SET S2 HTR B THAST BYPASS STATUS A RSET/SET S3 HTR A THAST BYPASS STATUS A RSET/SET S6	PB3 FSWB	BATT 3 TEM. SW E/D STATUS B RSET/SET	2-5	97,51	, .		
BATT 1 THAL SW E/D STATUS B RSET/SET S-2 HTR B THAST BYPASS STATUS A RSET/SET S-3 HTR A THAST BYPASS STATUS A RSET/SET S-4	PB2TSWB	SW E/D STATUS B	81	97,51			
HTR B THAST BYPASS STATUS A RSET/SET S-3 HTR A THAST BYPASS STATUS A RSET/SET S-4	PBITSWB	SW E/D STATUS B	82	97,51			
HTR A THMST BYPASS STATUS A RSET/SET S4	PTH2BPA	<	S3	15,76	-		
	PTH18PA	HTR A THMST BYPASS STATUS A RSET/SET	S.	97,51	-		

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	ALKOUIN	TLM FUNCTION DESCRIPTION	2411	COL, ROW	RATE	×	RIU-CB
	PAUHTRA	AUTO HTR OH/OPF STATUS A RSET/SET	<u>2</u> -8	97,51	7		
	PLD2PD	PD RELAY LOAD 2 CLOSED/OPEN	9	27,51	~ .		
40.00	run ru	PD RELAT LUAD I CLUSED/OPER	Ì	16.7%	-		90,00
	PCHORIB	CCHPUTER FOR E/O STATUS B &SET/SET	9	98.51	-		
	PECARMB	BATT CHG RLY DVR RIU B DISARKZD/ABMZD	3	98,51	-		
	PPDARMB	INSTR PUSE/PD R-D RIU B DISABAZD/ARMED	8-2	98,51	-		
	PHTARMB	HTR BLY DVR RIU & DISARNZD/ARNED	S3	90,51	-		
		HOT USED	24-7	98,51	-		
MPS-08	PTBATIP	10%	PASS	96,20			01-29
MPS-09	PTBAT2P	2 TEAP	PASS	97,20	-		03-30
HPS-42	PTBATIR		PASS	48,36	~	_	03-21
MPS-43	PT8AT2R	BATT 2 TEMP (REDUNDANT)	PASS	97,84	-		03-22
MPS-10	PTBCUI	PLU TEMP 1	PASS	61,96			03-15
MPS-11	PT BCU2	PCU TEMP 2	PASS	97,19			03-24
HPS-12	PTPCUS	PCU TEMP 3	PASS	61'86	-		03-20
MP3-13	PTBPA	BPA TEMP	PASS	66,27	-		03-26
MPS-14	PTSPRU	PRU TEMP	PASS	93,27			03-28
MPS-15	PTSCA	SCA TEMP	PASS	67,27	-		03-27
MPS-16	PTMPS1	HODULE TEMP 1	PASS	96,25	~		61-60
MPS-17	PTMP52	MODULE TEMP 2	PASS	97,25			03-10
HPS-18	PTP753	MODULE TEMP 3	PASS	98,55	~		03-17
HPS-19	PTHPS4	MODULE TEMP 4	FASS	96,26	~		03-16
KPS-20	PVDATI		ALOG	96,28			03-32
KPS-21	PVBAT2	BATT 2 VOLTACE	ALOC	96,29	~		03-33
MPS-22	PVLB	LOAD BUS WOLTAGE	ALOG	97,26	~		03-35
NPS-23	PV3BDE1	-	ALOG	97,28			03-45
MPS-24	PV 38.DE2	7	Ę	97,29	-1		03-44
MPS-25	PVDIFEL	-	ALOC	98,28	~		03-42
MPS-26	PVD1FB2	BATT 2 DIFFERENTIAL VOLTACE	ALOC	98,29			03-61
NPS-27	PVSCACA	SCA DC/DC CODY A VOLTAGE	ALOG	97,18	-		8 7- 0
MPS-28	PVSCACB	SCA DC/DC CORV B VOLTACE	ALOC	98,18			03-48
MPS-29	PIBIRI	BATT I HICH CURRENT	ALOG	16,0	128		03-52
MPS-31	PIBILO	BATT I LOW CURRENT	ALOC	96,14			03-55
MPS-30	P182HI	7	ALOC	15,0	128		03-51
MPS-32	P182L0	BATT 2 LOW CUARENT	PLOC	91,16	,		07-X
HPS-33	PISAL	CS I ARRAY/CID PAR CURRENT	ALOC	97,52	7		03-57
HPS-34	PISA2	CS 2 ARRAY/GND PWN CURRENT	ALOC	98,52	7		03-63
HPS 41	PVSA	SOLAR ARDAY BUS VOLTACE	ALOC	96.52	~		03-36
MPS-35	PI IMLO	INSTEUMENTS LOW CURRENT	ALOC	96,21	∢		C3-61
				88	128	₩	
10		A SAME OF SAME AND ADDRESS OF THE PARTY AND AD	***	77 00			67-63

ADDRESS RIU-CH	03-09	20-10	03-08	60-10	03-60	04-60				03-31	03-23	03-34	03-43	03-40	03-50 52-	03-53																
×	60	60	ŀ	ec	•	6 0															-											
SMPL RATE	128	128		128	-	128 128	2 2	128	128	-		p.48	~	-	128																	
HTX LOC COL, RC4	09	63,05	98,56	96,22	97,22	62	, 02	î	103	58,38	98,102	96,30	97,30	98,30	14	98,14	96,50	97,50	98,50	96,51	97.51	98,51	•									
SCHL TYP8	8-7	ALOG	9-6	ALOG	ALOG	517	3			· PASS	PASS	ALOC	ALOC	ALOC	ALOG	ALOG	ALOG	ALOC	ALOC	ALOG	ALOG	ALOC										
TLM PUNCTION DESCRIPTION	RIU 03 MATE STANDBY 1/OFF	MACS, PH CURRENT	RIU 03 B ON/A ON	Coda Current	SCACU, HPS CURRENT	TWEEDING OF TATOL	TOTAL MAN CHRORIT 3	TOTAL LOAD CURRENT 3	TOTAL LOAD CURREN 4	BATT 3 TEMP (PRIMARY)	BATT 3 TEMP (REDUNDANT)		~	BATT 3 DIPPERENTIAL VOLTAGE	BATT 3 HIGH CURRENT	BATT 3 LOW CURRENT	MPS STATUS WORD 1	MPS STATUS WORD 2		STATUS		50			•		-					
ACROHYM	PBIMSBI	FIACS	PRIBAON	FICON	PISCOU	1 1111	01T1	PITL3	PITL4	PTBAT3P	PTBAT38	PVBAT3	PV3RDE3	PVD1FB3	PIB3HI	PIB3LO	PSTAT01	PSTAT02	PSTAT03	PSTAT04	PSTAT05	PSTATO6										
USER ID		1F2-3/		HF5-38	MPS-39	WPS60	24-54			MPS-44	MPS-45	MPS-46	MPS-67	MPS-48	HPS-49	MPS-50																

Table 2-27. MPS Telemetry List

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SICHAL CONDITIONING AND CONTROL UNIT

SCACU CONTROL

Table 2-28

	USER ID	АСКОНТИ	TIM FUNCTION DESCRIPTION	SCWL TTPE	HTX LOC COL, ROW	SHPL	æ	Address Riu—Ch
<u> </u>	sc/cn-01	USSIAHTR USSIBHTE	PAYLOAD HEATER STATUS: NOT USED (DIGITAL 1) USS HEATER 1 A EMA/DISA USS HEATER 1 D ENA/DISA USS HEATER 1 THERMOSTAT BYPASS/RMA	80-1 8-2 8-3	96 96,04 96,04 96,04	e1 e1 e1		04-00
	sc/cu-02	USBTHTA USBTHT UTWAHA UTWAHB	DASB RAD PRIMARY HTR ENA/DISA DASB RAD RECUNDANT HTR RHA/DISA DASB RAD HTR THEKNOSTAT BYPASS/ENA NOT USED (DIGITAL 1) TH/MA PRIMARY HTR ENA/DISA TH/MA REDUNDANT HTR ENA/DISA	8 2 7 7 7 8 8 8 8 9 7 1 7 9 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9	98.98.98.98.98.98.98.98.98.98.98.98.98.9			10-40
	sc/cu-03	UMSAHTA UMSAHTE UMSATHT UWBHTRA UWBHTRB	MSS I/F A PRIMARY HTR ENA/DISA MSS I/F A RECUMDANT HTR ENA/DISA MSS I/F A RECUMDANT HTR E.AA/DISA MSS I/F A BTT THERMOSTAT BYFASS/ENA NOT USED (DIGITAL 1) WB MOD I/F PRIMART HTR ENA/DISA WB MOD I/F REDUMDANT HTR ENA/DISA WB MOD I/F HTR THERMOSTAT BYFASS/ENA		2			04-02
-143	sc/cu-04	USSZAHTR USSZBHTR USSZTHT UTPGITR I UTPGITR I UTPGITR I UTPGITR I	USS HEATER 2 & ENA/DISA USS HEATER 2 B ENA/DISA USS HEATER 2 THERHOSTAT BYPASS/ENA USE (IGITAL 1) TH SAPEHOLD HTR 1 EHA/DISA TH SAPEHOLD HTR 2 ENA/DISA TH SAPEHOLD HTR 2 ENA/DISA TH SAPEHOLD HTR 2 ENA/DISA TH SAPEHOLD HTR 8 PRA/DISA TH SAPEHOLD HTR 8 PRA/DISA DAYANA GTO 9 ENTHANT ENA/DISA		9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			90-90
	sc/cn-05	UPLBEILT UPLBTHT USCHTRI USCHTRI USCHTRZ USCHTRZ	PATLOAD HIR 8 KEDUNDAHI ENA/UISA BYTLOAD HIR 8 KEDUNDAHI ENFASS/ERA B/C HEATER STATUS: HOT USED (DIGITAL 1) S/C HEATER 1 ENA/DISA S/C HEATER 2 ENA/DISA S/C HEATER 2 THENOSTAT BYPASS/ENA S/C HEATER 2 THENOSTAT BYPASS/ENA		96,71 96,71 97,71 97,71 97,71			04-05
	sc/cn-06	USCATRA USCATRA USCATRA USCATRA USCATRA USCATRA	HEATER 3 USED (DIG HEATER 4 HEATER 5 HEATER 5	2 2 - 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	97,71 97,71 98,71 98,71 98,71 98,71	· m m m m m m m m		90-90

Table 2-28. SC/CU Telemetry List

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						:	2
	USCHTR6	S/C HEATER 6 BNA/DISA	S-6	98,71	1		
SC/CH-07	USC6THT	S/C HEATER 6 THERMOSTAT BYPASS/BNA ANTENNA DEPLOY PYRO STATUS:	s7	98,71			04-08
;		NOT USED (DIGITAL 1)	S_0	96,125	~		}
	UBDUMAS	UNPOWERED SIDE MASTER ARM-ARM/SAFE	S1	96,125			
	UBDPMAS	POWERED SIDE MASTER ARM-ARM/SAFE	S2	96,125	-		
	UBDBURL	ANTZHNA BOOM UNLATCH PTRO ARM/SAFE	S3	96,125			
	UBDCIMI	CIMBAL LOCK RELEASE PYRO 1 ARH/SAPE*	S.	96,125	-		
	UBDCIM2	GIMBAL LOCK RELEASE PTRO 2 ARM/SAFE*	SS	96,125	-		
	UCIMION	CIMBAL LOCK RELEASE PYROS 1 i 2 ANM/SAFE	87	96,125	-		
		(Landeat D Prime)					
	UBDPLUG	ARM PLUC CONTINUITY NO/TES	8-7	96,125			
sc/cn-08		ABRAY DEPLOY PYRO STATUS:					89
		NOT USED (DIGITAL 1)	9-0	97,125	-		
	UADUMAS	UNPOWERED SIDE MASTER ARM-ARM/SAFE	S1	97,125			
	UADPHAS	POWERED SIDS MASTER ARM-ARM/SAPE	S2	97,125	-		
	UADSTIA	SET 1 PYROS 1A & 2B ANM/SAPE	S-3	97,125	-4		
	UADSTIB	SET 1 PYROS 2A & 1B ARM/SAFE	\$-S	97,125	~		
	UADSTZA	SET 2 PYROS 3A 6 45 ARM/SAFE	SS	97,125	,- 1		
	UADST28	SET 2 PYRCS 4A & 3B ARM/SAPE	S6	97,125	-		
	VADPLUG	arm plug continuity no/yes	S1	97,125	-		
SC/Cn-09		COMMANDABLE JETTISON PYRO STATUS:			,		04-10
		NOT USED (DIGITAL 1)	9	98,125	-		
	UBJUHAS	UNPOURIED SIDE MASTER ARM-ARM/SAPE	22	98,125	,		
	UBJPMAS	POWERED SIDE MASTER ARM-ARM/SAPE	2- 5	98,125			
	UBJCCUT	CDA CABLE CUTTER PYRO ARM/SAFE	S-3	98,125			
	UBJPYRO	BOOM JETTISON PYRO ARM/SAFE	Ţ	98,125	~		
	UBJSPRI	SPARE PYRO ARM/SAPE	S-S	98,125			
	HR.ISPR2	SPARE PYRO ARM/SAFT	98	98.126	-		
	TR 191 100	ARA PILIC CONTINUITY NO/VEC	2-5	98 128	-		
01-110/35		BITCOUL BOOD OIL			,		04-32
	MOVAGORIA	20/07 A 12/03	9	04 17			04-32
	nous son			11,00			66-33
	Dan Ford				4.		
	UASPIKED	A SIUE PIKUS ENATLKU/DISABLED	79	10.00	٠.		100
	UBSPYRED	S SIDE PYROS KNABLED/DISABLED	F9	70,00	 ,		25-83
	UHTRAED	SCACU HEATER A RNABLED/DISABLED	9	96,17	-		96-36
	UTHTABE	SCACU THERMOSTAT A BIPASSED/ENABLED	85	96,17			04-37
	UNTRBED	SC&CU HEALER B ENABLED/DISABLED	9	96.17	-		04-38
	UTHTBBE	SCACU THERMOSTAT B BYPASSED/ENABLED	70	96,17	,-d		04-39
				•			

Table 2-28. SC/CU Telemetry List

### COLONIA TLY FURCTION DESCRIPTION TTYPE COLONIA MATE NOT THE SECONDAL COLONIA COLON				SCIII.	MTX 1.00	Sarpi		AnneRea	
Billings	USER ID	ACRONTH	TLM PURCTION DESCRIPTION	TRE	001, EOM	BATE	×	RIU-CH	
BHISSA BHIS BHIS SCACUT TRIPERINE TRAS SO, 18 1 1 1 1 1 1 1 1 1	SC/GH11		Alleval wash 02.					07-70	
SCACUL-13 UNIVERSE RULO A HATE STANDER 1/07F B=-1 96,18 18		Imiticas	10 4/20 & 70 1116	5	91 70	•		9 7 70	
\$C/CU-12 UTSCOL SGUT TERPERATURE PASS 96,12 \$C/CU-14 UTINES SPACECART STUCTURE TERP PASS 96,46 \$C/CU-14 UTINES SPACECART STUCTURE TERP PASS 96,46 \$C/CU-14 UTINES SPACECART STUCTURE TERP PASS 96,49 \$C/CU-17 UTINES SPACECART STUCTURE TERP PASS 96,91 \$C/CU-19 UTINES SPACECART STUCTURE TERP PASS 96,91 \$C/CU-17 UTINES SCACU STATUS SCACU STATUS ALAC 96,14 \$C/CU-21 USYNEP SCACU STATUS SCACU STATUS SCACU STATUS SCACU STATU		IMATENE	DIS OF MATO OTAMORY 1 JORD		94,10	4 -		7 7 90	
### SYNGEGRAY STRUCTURE TRRP 1 PASS 96,616 #### SYNGEGRAY STRUCTURE TRRP 2 PASS 96,616 #################################	SC/CII-12	ITSCOIL	SCACII TRIBORANIO	6040	96 12	- •		06-22	
SC/CU-14 UT/PRS SPACECAPT STRUCTURE TRNP 2 PASS 97,49 11	SC/CU-13	UTIMB		PASS	96.48	• ~		04-16	
### STACEGALY STRUCTURE TEPP	4 (-IL)/55	ITTOKAS		8049	97 AB	۰,-		7.70	
SC/CU-16 ITH-195E SPACE CALAT STRUCTURE TRAP 4 PASS 96,49 1 SC/CU-16 ITH-195E SPACE CALAT STRUCTURE TRAP 5 PASS 96,49 1 SC/CU-19 UTGNOS SFA-CCALAT STRUCTURE TRAP 6 PASS 96,49 1 SC/CU-19 UTGNOS SFA-CCALAT STRUCTURE TRAP 6 PASS 96,49 1 SC/CU-20 UTGNUD RIU OAA TEZETARATURE PASS 96,90 1 SC/CU-21 UTGNUD RIU OAA TEZETARATURE PASS 96,90 1 SC/CU-21 UTGNUD RIU OAA TEZETARATURE PASS 96,90 1 SC/CU-21 UTGNUD RIU OAA TEZETARATURE PASS 96,90 1 SC/CU-22 UUSANPA SCACU +3 V B PORER ALOC 90,76 1 SC/CU-24 USYAPA SCACU +2 V B PORER ALOC 96,4 1 SC/CU-24 USYAPA SCACU STATUS BODD RO. 1 ALOC 96,4 1 USYAPA SCACU STATUS BODD RO. 1 ALOC 96,12	SC/C0-15	173668	SPACECAAPT STRUCTION TOWN 1	28.80	94.09	- ۱		0.4-1.8 0.4-1.8	
8C/CU-17 UTSYSS SPACECLART STRUCTURE THE 5 8C/CU-18 UTGHOSS SPECELARY STRUCTURE THE 6 8C/CU-19 UTGHOSS SPECELARY STRUCTURE THE 6 8C/CU-20 UTRIUD RIU OAA TERFERATURE PASS 96,49 15C/CU-21 UTSYAPA SCACU +5 V A FOURER ALCC 99,79 15C/CU-21 UTSYAPA SCACU +5 V A FOURER ALCC 99,79 15C/CU-21 UTSYAPA SCACU +5 V A FOURER ALCC 99,79 15C/CU-21 UTSYAPA SCACU +5 V A FOURER ALCC 99,79 15C/CU-21 UTSYAPA SCACU +5 V A FOURER ALCC 99,79 15C/CU-22 UTSYAPA SCACU +5 V A FOURER ALCC 99,79 15C/CU-21 UTSYAPA SCACU +5 V A FOURER ALCC 99,74 15C/CU-22 UTSYAFA SCACU STATUS SODD RO. 1 15C/CU-24 UTSYAPA SCACU STATUS SODD RO. 5 15C/CU-25 UTSYAPA SCACU STATUS SODD RO. 5 15C/CU-26 UTSYAPA SCACU STATUS SODD RO. 5 15C/CU-27 UTSYAPA SCACU STATUS SODD RO. 5 15C/CU-27 UTSYAPA SCACU STATUS SODD RO. 5 15C/CU-27 UTSYAPA SCACU STATUS SODD RO. 7 15C/CU-27 UTSYAPA SCACU STATUS SODD RO. 7 15C/CU-27 UTSYAPA SCACU STATUS SODD RO. 7 15C/CU-27 UTSYAPA SCACU STATUS SODD RO. 10 15C/CU-27 UTSYAPA SCACU STATUS SCACU STATUS SCACU STATUS SCACU STATUS SCAC	\$1-1U/5	ITTA HOVE	CPACECRAPT STRICTION TOWN A	BOVE	0 V 9 V	•		04-10	
SC/CU-18 17606S STRECTOLY FINCTION TO THE BOARD STREET STR	C / C 1 1 1 1 1 1 1 1 1	Try Service		2048	97.49	• •			
UTRIUD RIU 04A TENTERATURE PASS 96,99 11 UTRIUD RIU 04A TENTERATURE PASS 96,99 11 USYMPRA SCACU +57 V A PORER ALCC 99,15 11 USYMPRA SCACU +57 V A PORER ALCC 99,18 11 USYMPRA SCACU +57 V A PORER ALCC 99,74 USTATOS SCACU STATUS WORD BO. 1 ALCC 96,4 USTATOS SCACU STATUS WORD BO. 3 ALCC 99,74 USTATOS SCACU STATUS WORD BO. 4 ALCC 99,71 USTATOS SCACU STATUS WORD BO. 6 ALCC 99,71 USTATOS SCACU STATUS WORD BO. 9 ALCC 99,71 USTATOS SCACU STATUS WORD BO. 9 ALCC 99,125 USTATOS SCACU STATUS WORD BO. 9 ALCC 99,125 USTATOS SCACU STATUS WORD BO. 9 ALCC 96,18 USTATOS SCACU STATUS WORD BO. 9 ALCC 96,18 USTATOS SCACU STATUS WORD BO. 9 ALCC 96,18 USTATOS SCACU STATUS WORD BO. 10 ALCC 96,18	1 - 12/28 - 12/28	22712	SCHOOLS STOCKED TENT 3	nada Gove	64 60	٠.		27-40	
SC/CU-20 VIRILION RIU ON IUPIERATIUE PASS 50,505 11 SC/CU-20 VIRILION RIU ON IUPIERATIUE PASS 50,505 11 SC/CU-21 USYAPR SCCU +5 V A POEER ALGG 98,15 11 SC/CU-22 USYAPR SCCU +5 V A POEER ALGG 98,19 11 SC/CU-24 USYAPR SCCU +5 V B POEER ALGG 98,19 11 SC/CU-24 USYAPR SCCU +5 V B POEER ALGG 98,19 11 SC/CU-24 USYAPR SCCU 5 TANUS 600D RO. 1 ALGG 96,4 USTATO SCCU STATUS 600D RO. 2 ALGG 98,71 USTATO SCCU STATUS 800D RO. 6 ALGG 98,71 USTATO SCCU STATUS 800D RO. 9 ALGG 98,125 USTATO SCCU STATUS 800D RO. 9 ALGG 98,125 USTATO SCCU STATUS 800D RO. 9 ALGG 98,17 USTATO SCCU STATUS 800D RO. 9 ALGG 96,17 "JATILI SCCU STATUS 800D RO. 10 ALGG 96,17 "JATILI SCCU STATUS 800D RO. 11	07.00	CUUDIO	STATECHARI SIMULIURE IESE D	2000	B C C	٠,		17-50	
SC/CU-20 USYAPPA SCACU +5 V A POWER	51-3/3	CIKINA	RIU CAA TEMPERATURE	FASS	20,02	-		47-40	
Second +25 v A Poster	SC/CU-20	UTRIUE	RIO 04B TEMPERATURE	PASS	06,36	-		06-25	
8C/CU-22 U259APW SCACU +25 V A POSER ALOC 99.79 1 8C/CU-24 U59VBPM SCACU +25 V B POSER ALOC 97.46 1 8C/CU-24 U259BPW SCACU +25 V B POSER ALOC 96.94 1 USTATO2 SCACU STATUS WORD BO. 1 ALOC 96.94 1 USTATO3 SCACU STATUS WORD BO. 2 ALOC 96.71 1 USTATO4 SCACU STATUS WORD BO. 5 ALOC 96.71 1 USTATO5 SCACU STATUS WORD BO. 5 ALOC 96.71 1 USTATO6 SCACU STATUS WORD BO. 7 ALOC 96.71 1 USTATO9 SCACU STATUS WORD BO. 7 ALOC 96.125 1 USTATO9 SCACU STATUS WORD BO. 7 ALOC 96.125 1 USTATO9 SCACU STATUS WORD BO. 9 ALOC 97.125 1 USTATO9 SCACU STATUS WORD BO. 10 ALOC 96.11 1 ISTATO1 SCACU STATUS WORD BO. 10 ALOC 96.11 1 ISTATO1 SCACU STATUS WORD BO. 11 ALOC 96.11 1 ISTATO1 SCACU STATUS WORD BO. 11 ALOC 96.11 1 ISTATO3 SCACU STATUS WORD BO. 11 ALOC 96.11 1 ISTATO3 SCACU STATUS WORD BO. 11 ALOC 96.11 1	8C/CD-21	USVAPER	SCECU +5 V A POSER	ALOS	98,15			04-42	
SC/CU-23 USVDP-MR SCACU +59 B POWER ALOC 97,46 11 SCACU +57 W B POWER ALOC 96,94 11 USTATO1 SCACU STATUS WIDE BO. 1 ALOC 96,94 11 USTATO2 SCACU STATUS WIDE BO. 2 ALOC 97,4 USTATOS SCACU STATUS WIDE BO. 3 ALOC 97,71 USTATOS SCACU STATUS WIDE BO. 5 ALOC 97,71 USTATOS SCACU STATUS WIDE BO. 5 ALOC 97,71 USTATOS SCACU STATUS WIDE BO. 9 ALOC 97,125 USTATOS SCACU STATUS WIDE BO. 9 ALOC 96,15 USTATOS SCACU STATUS WIDE BO. 9 ALOC 96,15 USTATOS SCACU STATUS WIDE BO. 10 ALOC 96,15	8c/cn-22	UZSVAPW	SCLCU +25 V A POSER	ALCC	96,79			04-43	
SC/CU-24 U259EPM SC4CU 425 V B POWER ALOC 96,94 1 USTATO1 SC4CU STATUS WORD EO. 1 ALOC 96,4 USTATO2 SC4CU STATUS WORD EO. 2 ALOC 99,4 USTATO3 SC4CU STATUS WORD EO. 5 ALOC 98,71 USTATO5 SC4CU STATUS WORD EO. 5 ALOC 98,71 USTATO6 SC4CU STATUS WORD EO. 7 ALOC 98,71 USTATO6 SC4CU STATUS WORD EO. 7 ALOC 98,72 USTATO7 SC4CU STATUS WORD EO. 9 ALOC 98,125 USTATO8 SC4CU STATUS WORD EO. 9 ALOC 98,125 USTATO9 SC4CU STATUS WORD EO. 9 ALOC 98,125 USTATO9 SC4CU STATUS WORD EO. 9 ALOC 96,17 'FAT11 SC4CU STATUS WORD EO. 10 ALOC 96,17 'FAT11 SC4CU STATUS WORD EO. 11	3C/CD-23	USVBPAR	SCACU +5V B POWER	VIOC .	97,46	-		96-66	
USTATO1 SCACU STATUS WORD NO. 1 USTATO2 SCACU STATUS WORD NO. 2 USTATO3 SCACU STATUS WORD NO. 3 USTATO4 SCACU STATUS WORD NO. 4 USTATO5 SCACU STATUS WORD NO. 4 USTATO5 SCACU STATUS WORD NO. 6 USTATO6 SCACU STATUS WORD NO. 7 USTATO9 SCACU STATUS WORD NO. 9 USTATO9 SCACU STATUS WORD NO. 9 USTATO1 SCACU STATUS WORD NO. 10 USTATO1 SCACU STATUS WORD NO. 11 ALOG	SC/C0-24	UZSVBPW		A.oc	96,96	-		04-45	
USTATO2 SCACU STATUS WORD BO. 2 USTATO3 SCACU STATUS WORD BO. 3 USTATO4 SCACU STATUS WORD BO. 4 USTATO5 SCACU STATUS WORD BO. 5 USTATO5 SCACU STATUS WORD BO. 7 USTATO6 SCACU STATUS WORD BO. 7 USTATO9 SCACU STATUS WORD BO. 7 USTATO9 SCACU STATUS WORD BO. 9 ALOC USTATO SCACU STATUS WORD BO. 10 ALOC USTATO1 SCACU STATUS WORD BO. 11 ALOC ALOC ALOC ALOC ALOC ALOC ALOC USTATO1 SCACU STATUS WORD BO. 12 ALOC A	2	USTATOL		ALOS	96,4				
USTATO3 SC4CU STATUS WOLD NO. 3 ALOG USTATO4 SC4CU STATUS WOLD NO. 4 ALOG USTATO6 SC4CU STATUS WOLD NO. 5 ALOG USTATO6 SC4CU STATUS WOLD NO. 7 ALOG USTATO8 SC4CU STATUS WOLD NO. 7 ALOG USTATO8 SC4CU STATUS WOLD NO. 9 ALOG USTATO9 SC4CU STATUS WOLD NO. 10 ALOG USTATO1 SC4CU STATUS WOLD NO. 11 ALOG "JTAT11 SC4CU STATUS WOLD NO. 11 ALOG	! - :	USTATO2	STATUS KORD	ALOC	97.4				
USTATO4 SCACU STATUS WORD NO. 4 USTATO5 SCACU STATUS WORD NO. 5 USTATO9 SCACU STATUS WORD NO. 6 USTATO9 SCACU STATUS WORD NO. 9 USTATO9 SCACU STATUS WORD NO. 9 USTATO9 SCACU STATUS WORD NO. 10 ALOC USTATO1 SCACU STATUS WORD NO. 10 ALOC "ITATI1 SCACU STATUS WORD NO. 11	14	USTATO3	STATUS LOAD	ALOC	4.86				
SCÉCU STATUS WORD NO. 5 SCÉCU STATUS WORD NO. 6 SCÉCU STATUS WORD NO. 7 SCÉCU STATUS WORD NO. 9 SCÉCU STATUS WORD NO. 10 SCÉCU STATUS WORD NO. 10 SCÉCU STATUS WORD NO. 11 ALCO SCÉCU STATUS WORD NO. 12 ALCO	5	USTATO4	STATUS WORD	ALOS	96.71				
SCACU STATUS HORD EO. 6 SCACU STATUS HORD EO. 7 SCACU STATUS HORD EO. 9 SCACU STATUS HORD EO. 9 SCACU STATUS HORD EO. 10 SCACU STATUS HORD EO. 10 ALCC SCACU STATUS HORD EO. 12 ALCC		USTATOS	STATUS MORD	ALOG	97.71				
SCACU STATUS WORD BO. 7 SCACU STATUS WORD RO. 9 SCACU STATUS WORD RO. 9 SCACU STATUS WORD RO. 10 SCACU STATUS WORD RO. 11 ALGO SCACU STATUS WORD RO. 12 ALGO	_	USTATO6	STATUS BORD	SOTA VIOS	98.71				
SCACU STATUS HORD RO. 9 SCACU STATUS HORD RO. 9 SCACU STATUS HORD RO. 10 ALCC SCACU STATUS HORD RO. 11 ALCC		USTATO?	STATUS FORD	ALOG	96,125				
SCACU STATUS WOLD NO. 9 SCACU STATUS WOLD NO. 10 SCACU STATUS WOLD NO. 11 ALOG SCACU STATUS WOLD NO. 12		USTATOB	STATUS MORD	41.00	97,125				
SCACU STATUS WORD NO. 10 ALOG SCACU STATUS WORD NO. 11 ALOG		USTAT09	STATIS HORD	AT CO	99 125				
SCACU STATUS WORD NO. 11 ALOGO		11574710	GTATIC WORD IN		06 17				
		114146.	CELTIC DOES NO.	302	11.00				
		11111	SIATUS BOLD (80.	arra arra	80'0X				
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Table 2-28. SC/CU Telemetry List

SVS-101231 Volume I: October 1000

ORIGINAL PAGE IS OF POOR QUALITY

EARTH SENSOR ASSEMBLY MODULE

Teble 2-29 ESAM

2-146

ORIGINAL PAGE IS OF POOR QUALITY

Table 2-29. ESAM Telemetry List

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Table 2-30
PM
PROPULSION HODULE

2-148

ORIGINAL PAGE IS OF POOR QUALITY

USER ID	ACROHYN	TLM PURCTION DESCRIPTION		COL. B.CH		×	ETG-CH
24-01 24-01		BILZVEL HOED OI:				_	05-32
:	ZMATENE	RIU OS MATE STABDBY 1/0FF	Î	97.17	-		05-32
	ZRIUSDA	AIU 05 B OE/A OS	I	97,17	-	_	05-33
	ZEMAPRIT	REM A PRIMARY HEATER ON/OFF	- S	97,17	-	_	05-35
	ZAMBPBHT	REM B PRIMAGE REATER ON/OFF	7	97,17	-		05-36
	ZEHCPABT	· u	- F	97.17			05-37
	ZEMOPERT	RZM D PRIMARY HEATER ON/OFF	9	97,17	-	_	05-38
	2S HP PRHT	SHELF PRIMARY HEATERS OB/OFF	1-1	97.17	-	_	05-39
P#-02		BILEVEL MORD 02:			Ì		02-40
	ZRMABUHT	REM A REDUIDANT HEATER OU/OFF	9	98,17	~		05-40
	ZRABBURT	REM B REDUIDANT HEATER OF/077	7-8	98,17		_	19-50
	ZENCBUHT	REM C REDUNDANT HEATER ON/OFF	B2	98,17		_	05-42
	THUBOARS	REM D REDUIDANT REATER CH/OFF	03	28,17		_	05-43
	ZSILPBURIT	SHELF REDUNDANT HEATERS ON/OFF	9-0	98,17	~		05-44
PN-03	ZTRMAIA3	REM A TEMP 1(PAR-A), TEMP3(PAR-B)	PASS	97,37	, -4	_	05-16
PH-04	ZTRMA2A4	•	PASS	97,38	-		05-17
PPF-05	ZT0M8103	62	PASS	98,123	-	_	05-18
90-H4 2-	ZT AMB 2B4	6	PASS	98,124	-	_	05-19
	ZTRKC1C3	ပ	PASS	48,67		_	05-50
-	ZTEMC2C4	KEM C TEMP 2(PMZ-A), TEMP4(PMZ-B)	PASS	98,88	-	_	05-21
PH-09	ZTRMD103	REM D TEMP 1(PIE-A), TEMP3(PME-B)	PASS	97,89	 4 (05-22
01-11	ZTEMOZD4	SEM D TEMP 2(PME-A), TEMP4(PME-D)	PASS	05,76	⊶ .	• `	62-40
11-62	ZTTANKI	~ (PASS	53, 78 50, FG		- `	27.0
71-W	ZTTANXZ	TANK 2 TEMP	PASS	47.75	٠,	٠,	. 62-60
E ?	ZTTANKJ	TANK 3 TEMP	PASS	62,89	≺ .	- 1	92.40
51-42	\$1174174	1/V 1 TEST (FRE-5), L/V4 TERP(FRE-5)	PASS	67,88	-4 <i>-</i> -	- •	77-50
C1-42	CATTATIT	1/0 2 TEAR (FRE-8), L/05 TEAR(FRE-8)	2000	16. BO	→ •	- •	07-28 04-18
21.78	21 LV 3LV	EDAM TOWN COMPOSEMENT OF COMPOSED	2000	46.00	4 -	_	
2 2	PFRACTIA	COAM TEND NEW ACTUAL TO SEE NOW TO NOT A	0046	100 B	4	•	31.50
20	18011142	FIEL TAKE PERSHER	Af.Of	68.67	• ~	_	05-14
PM-20	ZHTRBUS	PRI/AZDUND HTB BUS ERA/DISA	ALOC	97,117			05-34
PH-21	ZLVDVRS	PRE A/B LATCH VALVE DRIVER ERA/DISA	ALOC	96,126	-	_	05-45
PH-22	ZLV123	LATCH VALVES 1,2,3 OPEH/CLOSED	ALOG	97,126	-	_	05-46
PH-23	21.94 56	LATCH VALVES 4,5,6 OPER/CLOSED	ALCC	98,126	-	_	05-47
PH-24	ZEABATC	PRE A/B ATT CONTROL ENA/DISA	ALOG	96,105	-4	_	05-48
P#-25	ZEAPULS		ALOC	20,112	-	_	05-49
PH-26	ZEBPULS		ALCC	98,113	-		870
PH-27	ZACSDIR	ACS DIRECT CONTROL IMPUTS EMA/DISA	ALCC ALCC	96,109		_	05-51
PH-28	ZEAPATC	A POS ATT COST	ALOG	97,109	-	_	05-56
PH-29	ZEANATC	⋖	ALOG	98,103		_	05-57
P#-30	ZEBPATC	PHE B POS ATT CONT REM A/C ENA/DISA	ALGG	97,110		_	05-58

Table 2-30. PH Telemetry List

1

ORIGINAL PAGE IS OF POOR QUALITY

address Riu-Ch	05-59	05-53	05-54	05-55	03-60	1961	05-62	05-12		07-13	05-00		05-01	; ;	7007	05-03		06-46 (Not used on LSD)	04-03								04-07 (Hot used on LSD)								9	04-26	04-27	04-22
M M	00	•	0	0	•	•	•	0	-	o -			•	•	•	0		0 (•								•								•	φ,	•	•
SHPL		-	-	-4			-		128	128	128	126	128	126	128	128	128	-		- ,	-	~ .	→ .		- ١	4 ,	•	-	-	-		-4	~		,	~ 4	⊶,	-
MTZ LOC COL, ROS	98,110	97,112	96,113	97,113	98,115	96,114	>6,115	97,114	90	97,115	3	63	36	100	o e	37	101	33,00	;	32,64	32.04	32,64	32,04	32,64	12,04	44.65		32,77	32,77	32,77	32,77	32,77	32,77	32,77	32.77	96,64	97,64	0/'85
SCNL TYPE	ALOG	ALOG	ALOC	ALOG	ALOG	ALOG	ALOC	ALOG		ALOC	ALOC		ALOG	8	ALOG	ALOG		ALOC		0	2-1	2-5 0				7		S0	S1	S2	83	36	S5	9-6	S7	PASS	PASS	PASS
I TLM FUNCTION DESCRIPTION	: PME B NEG ATT CONT NEM A/C ENA/DISA PME A POS ATT CONT TORO PULSE GEN	PME A NEC ATT CONT	PHE B POS ATT	E	Z	: PHE A TR CONT REM A,C/B,D ENA/DISA	PAR	REM		REM B/D TRAMSL CONT THRUSTERS OH/OFF	BEH A ATT CONTROL THRUSTERS ON/OFF		: REM C ATT CONTROL THRUSTERS ON/OFF		AER B ALL CONTROL THRUSIERS UR/UFF	CAR D ATT CONTROL THRUSTERS ON/OFF			PM-IA HEATER I-4 STATUS:	NOT USED (DIGITAL 1)			ra-1A	f PM-IA LINE BIR INRESTAT BYP/EMA		41-MG			UNPOWERED SIDE MASTER ARM-ARM/SAFE	POWERED SIDE MASTER ARM-ARM/SAFE								PR-IA LINE TEMPERATURE
ACRONYM	ZEAPGEN	ZEANGEN	ZEBPGEN	ZEBNCEN	ZEABTRS	ZEARMTC	ZEBRMTC	ZRMACTA	1	ZRMBD,C	ZRMAATC		ZRHCATC		2 LABA12	ZRMDATC		ZFULPSI			!	ZPRIKHI	ZFRLAMI	ZPKLNIM	THEN LINE	FILL TICE	ZIALVGH				ZVLCOPN	STCOATZ	ZLVHCLS	ZLVHOPN	ZLVPLUC	ZTIATNK	ZTIASUL	STIALIN
USER ID	PH-31 PH-32	PH-33	PK-34	PM-35	PM-36	PH-37	PM-38	PM-39	•	P#-40	PH-41		PH-42	64.40	3	PH-44		PH-47	FH-45								PH-46									PH-48	PH-49	24-20

Table 2-30. PM Telesetry List

	ดิรา	
Address Reu-Ch	06-29 (Hot used on LSD)	
×		
SKPL RATE	-	
HTX LOC COL, RGH	32,85	
Schl. Type	PASS	
TLM PUNCTION DESCRIPTION	PM-1A LATCH VALVE STATUS PH BILEVEL WORD 1 PM-1A STATUS WORD 1	
ACRONTH	251AT01 251AT02 21ASTAT1	
USER ID	25-12 15-14	2-151

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ORIGINAL PAGE IS OF POOR QUALITY

WIDELAND COMMUNICATIONS SUBSTSTEM

Table 2-31 WBCS

ORIGINAL PAGE IS OF POOR QUALITY

##-01	PRIMART SERI. 1 I 1 I AZIH POS'H, AL OUTPUT: DECREED 0.0/0.0 DECREES 0.0226/0.0 DECREES 0.0439/0.0 DECREES 0.0439/0.0 DECREES 0.158/0.0 DECREES 0.158/0.0 DECREES 1.1660/0.0 DECREES 1.6130/0.0 DECREES 1.6250/0.0 DECREES 1.250/0.0 DECREES 11.250/0.0 DECREES 10.000/0.0	96,01 96,01 96,01 96,01 96,01 97,01 97,01 97,01 97,01	वववववववव ववववववव		60-60		
WANTAZO1 GDA WANTAZO1 GDA WANTAZO2 GDA WANTAZO3 GDA WANTAZO5 GDA WANTAZO5 GDA WANTAZO5 GDA WANTAZO3 GDA WANTAZO5 GDA WANTAZO5 GDA WANTAZO3 GDA WANTAZO5 GDA	ALIM POS'N, AZIM POS'N,	REED 0.0/0.0 REES 0.0226/0.0 REES 0.0439/0.0 REES 0.0879/0.0 REES 0.1758/0.0 REES 0.1316/0.0 REES 1.4060/0.0 REES 1.250/0.0 REES 22.500/0.0 REES 22.500/0.0 REES 22.500/0.0 REES 360/0.0		96,01 96,01 96,01 96,01 96,01 97,01 97,01 97,01 97,01 97,01	चिच्चचचचचच चचचचचचच		
WANTAZO2 GDA WANTAZO3 GDA WANTAZO3 GDA WANTAZO5 GDA WANTAZO5 GDA WANTAZO5 GDA WANTAZO3 GDA WANTAZO4 GDA WANT	AZIH POS'R, AZIH POS'R, AZIH POS'R, AZIH POS'B, AZIH POS'B, AZIH POS'B, AZIH POS'B, AZIH POS'R,	REES 0.022C/0.0 REES 0.0439/0.0 REES 0.0879/0.0 REES 0.1758/0.0 REES 0.1316/0.0 REES 1.4060/0.0 REES 1.250/0.0 REES 22.500/0.0 REES 90.000/0.0 REES 90.000/0.0		96,01 96,01 96,01 96,01 97,01 97,01 97,01 97,01	विवयययय वयववयवय		
WANTAZO3	AZIM POS'H,	REES 0.0439/0.0 REES 0.0879/0.0 REES 0.0879/0.0 REES 0.1758/0.0 REES 1.4060/0.0 REES 1.6060/0.0 REES 2.6130/0.0 REES 22.500/0.0 REES 22.500/0.0 REES 90.000/0.0 REES 90.000/0.0 REES 90.000/0.0		96,01 96,01 96,01 96,01 97,01 97,01 97,01 97,01	चिव्यक्षक च्यक्ष्यक्ष		
WANTAZO4 GDA WANTAZO5 GDA WANTAZO5 GDA WANTAZO5 GDA WANTAZO8 GDA WANTAZO9 GDA WANTAZO9 GDA WANTAZO9 GDA WANTAZO9 GDA WANTAZO9 GDA WANTAZO5 GDA WANT	AZIM POS'H,	REES 0.0879/0.0 REES 0.1758/0.0 REES 0.1758/0.0 REES 1.4060/0.0 REES 1.6130/0.0 REES 2.6130/0.0 REES 22.500/0.0 REES 22.500/0.0 REES 90.000/0.0 REES 90.000/0.0		96,01 96,01 96,01 96,01 97,01 97,01 97,01 97,01	क्षक्षक क्षक्षक्षक		
WANTAZOS GDA WANT	AZIM POS'H,	REES 0.1758/0.0 REES 0.3516/0.0 REES 0.7031/0.0 REES 1.4060/0.0 REES 2.8130/0.0 REES 5.6250/0.0 REES 22.500/0.0 REES 22.500/0.0 REES 22.500/0.0 REES 36.000/0.0		96,01 96,01 96,01 97,01 97,01 97,01 97,01 97,01	विक्षक क्ष्यक्षव्यक्ष		
WANTAZO6	AZIM POS'B, AZIM POS'B, AZIM POS'B, AZIM POS'B, AZIM POS'N, AZIM POS'N, AZIM POS'N, AZIM POS'N, AZIM POS'N, AZIM POS'N,	REES 0.3516/0.0 REZS 0.7031/0.0 REES 1.4060/0.0 REES 2.6130/0.0 REES 22.500/0.0 REES 45.000/0.0 REES 90.000/0.0 REES 180.00/0.0		98,01 98,01 98,01 97,01 97,01 97,01 97,01 97,01	क्षक क्षक्षक्षक		
MAHTAZOJ GDA MAHTAZOS GDA HARTAZOS GDA WAHTAZIO GDA WAHTAZIO GDA WAHTAZIO GDA WAHTAZIO GDA WAHTZOS GDA	AZIM POS'B, AZIM POS'B, AZIM POS'B, AZIM POS'B, AZIM POS'B, AZIM POS'B, AZIM POS'B, AZIM POS'B, AZIM POS'B,	REZES 0.7031/0.0 REZES 1.4060/0.0 REZES 2.6130/0.0 REZES 5.6250/0.0 REZES 21.2500/0.0 REZES 45.000/0.0 REZES 90.000/0.0 REZES 90.000/0.0 REZES 90.000/0.0		96,01 96,01 97,01 97,01 97,01 97,01 97,01 97,01	चिक क्षच्यवक्षक		
WAHTAZOB CDA WARTAZOB CDA WARTAZOB CDA WAHTAZOB CDA WAHTAZOB CDA WAHTAZOB CDA WAHTELOOB CDA WANTELOOB CDA WANTELOOB CDA WANTELOOB CDA WANTELOOB CDA WANTELOOB CDA AZIM POS'B,	REES 1.4060/0.0 REES 3.6130/0.0 REES 3.6250/0.0 REES 21.500/0.0 REES 45.000/0.0 REES 90.000/0.0 REES 180.00/0.0	8 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	96,01 97,01 97,01 97,01 97,01 97,01 97,01	च चयचचयचयच			
#08D #AFTAZO9 CDA #AFTAZ10 CDA #AFTAZ11 CDA #AFTAZ12 CDA #AFTAZ13 CDA #AFTAZ13 CDA #AFTAZ14 CDA #AFTAZ15 CDA #AFTAZ15 CDA #AFTELO1 CDA #AFTELO2 CDA	2 AZIH POS'B, AZIH POS'B, AZIH POS'H, AZIH POS'H, AZIH POS'B, AZIH POS'B,	REES 2.8130/0.0 REES 3.6250/0.0 REES 11.250/0.0 REES 22.500/0.0 REES 90.000/0.0 REES 360/0.0	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	97,01 97,01 97,01 97,01 97,01 97,01	****		
HAFTAZO9 GDA WAFTAZIO GDA	AZIM POS'B, AZIM POS'B, AZIM POS'N, AZIM POS'N, AZIM POS'N, AZIM POS'N,	REES 2.8130/0.0 REES 5.6250/0.0 REES 11.250/0.0 REES 22.500/0.0 REES 90.000/0.0 REES 180.00/0.0	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	97,01 97,01 97,01 97,01 97,01 97,01	વ યવવય ા વ		
#AHTAZ10 GDA #ANTAZ11 GDA #ANTAZ12 GDA #ANTAZ13 GDA #ANTAZ15 GDA #ANTAZ15 GDA #ANTAZ16 GDA #ANTELO1 GDA #ANTELO2 GDA #ANTELO2 GDA #ANTELO2 GDA #ANTELO2 GDA	AZIM POS'B, AZIM POS'B, AZIM POS'R, AZIM POS'R, AZIM POS'R, AZIM POS'R,	REES 5.6250/0.0 REES 11.250/0.0 REES 22.500/0.0 REES 45.000/0.0 REES 90.000/0.0 REES 180.00/0.0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	97,01 97,01 97,01 97,01 97,01	यक्ष्यक्ष्य		
WANTAZ11 CDA WANTAZ12 CDA WANTAZ13 CDA WANTAZ14 CDA WANTELO1 CDA WANTELO2 CDA WANTELO3 CDA WANTELO5 CDA WANTELO3 CDA	AZIM POS'B, AZIM POS'R, AZIM POS'R, AZIM POS'B, AZIM POS'R,	REES 11.250/0.0 REES 22.500/0.0 REES 45.000/0.0 REES 90.000/0.0 REES 180.00/0.0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	97,01 97,01 97,01 97,01 97,01	વિવા વવવ		
HANTAZIZ GDA WANTAZI3 GDA WANTAZI4 GDA HANTAZI5 GDA KANTAZI6 GDA WANTELO1 GDA WANTELO3 GDA WANTELO3 GDA WANTELO5 GDA	AZIM POS'H, AZIM POS'H, AZIM POS'H, AZIM POS'H, AZIM POS'H,	REES 22.500/0.0 REES 45.000/0.0 REES 90.000/0.0 REES 180.00/0.0	8 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	97,01 97,01 97,01 97,01	****		
WANTA213 GDA WANTA214 GDA WANTA215 GDA KANTA216 GDA WANTEL01 GDA WANTEL02 GDA WANTEL03 GDA WANTEL04 GDA	AZIH POS'H, AZIH POS'H, AZIH POS'H, AZIH POS'H,	REES 45.000/0.0 REES 90.000/0.0 REES 180.00/0.0 REES 360/0.0	8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	97,01 97,01 97,01	4444		
WANTAZ14 GDA HANTAZ15 GDA KANTAZ16 GDA WANTEL01 GDA WANTEL02 GDA WANTEL03 GDA WANTEL04 GDA	AZIM POS'R, AZIM POS'R, AZIM POS'R,	REES 90.000/0.0 REES 180.00/0.0 REES 360/0.0	8-5	97,01 97,01 97,01	404		
HANTA215 GDA KANTA216 GDA HARTELO1 GDA HANTELO2 GDA HANTELO3 GDA HANTELO4 GDA	AZIM POS'H,	REES 180.00/0.0 REES 360/0.0	86	97,01	44		
KANTAZ16 CDA WANTELO1 CDA WANTELO2 CDA WANTELO3 CDA WANTELO3 CDA	AZIM POS'R,	ares 360/0.0	87	97,01	•		
WAYTELOI CDA WAYTELOI CDA WAYTELOZ CDA WAYTELO3 CDA WAYTELO5 CDA		0 0/0 0 944		:	•		
WANTELO1 CDA WANTELO2 CDA WANTELO3 CDA WANTELO4 CDA		0 0/0 0 2220					
8 6 6	POS'N		08	98.01	•		
8 8	POS'R.	DZGREES 0.0/0.0	S2	98.01			
đ	POS'R		S-2	98.01	•		
	POS. H.		S-3	10.86	•		
VANTELOS GDA	POS. 18		4	10.86	-4	-	
V CD	SLEV POS'M.		85	98.01	•		
¥d5	ELEV POS'N.		9-8	10,86	•		
_	POS'E		87	98,01	4		
•							
WANTELO9 CDA	CDA ELEV POS'N. DEC	DECREES 1.4060/0.0	9	10'66	•		
_		DECREES 2.8130/0.0	1-6	99,01	→		
CDA		DECREES 5.6250/0.0	82	10.66	•		
YQS		DEGREES 11.250/0.0	53	10,66	•		
WANTEL13 GDA		DECREES 22.500/0.0	88	10,66	•		
CDA		DECREES 45.000/0.0	S5	10,66	*		
Ğ	FLEV POS'B, DEG	ELEV POS'B. DEGREES 90.000/0.0	9g	10'66	-		
CEA	ELEV POS'H, DEC	ELEV POS'H, DEGREES 180.00/0.0	87	10,66	4		
G	REDIEM SERIAL OUTPIT (EDRD 1)	MITPIT (KORD 1)	20-7	96.03	•	ŏ	09-73
HANTA28 GDP	REDUND SERIAL OUTPUT	UTPIT (408D 2)	20-7	97,03	4	ĺ	
3 2	THE CANADA CANADA	0207)	5	0 80	• •		
200	REDUKT SERIAL OUTPUT	(FORD	20-7	99,03	• • •		
150	PRIMARY STATIS:			•		ŏ	80-60
						i	

Table 2-31. WBCS Telesetry List

Table 2-31. WBCS Telemetry List

Ser Id	АСКОНУМ	TLM PUNCTION DESCRIPTION	TYPE	COL, ROH	BATB	×	RIU-CH
	WPKQTYMS	KU-BAND Q CHANNEL TM/MSS	0S	98,13	1		
	WPKI PNTM	KU-BAND I CHANNEL 84PN/TM	S1	98,13	-		
	WPKOPP	KU-BAND OFF/ON	S2	98,13			
	WPXORP	X-BAND OFP/ON	S3	98,13			
	HPXQTMHS	X-BAND Q CHANNEL TM/MSS	88	98,13			
	WINGINAM	X-BAND I CHANNEL 84PN/TM	35	98.13			
	WPCMDENA	COMMAND ENA/DISA STATUS (11-ENABLE)	26-7	98,13			
WB-04		DSU REDUNDANT STATUS:		•			09-72
	MAKQTHMS	KU-BAND Q CHAMMEL TM/MS8	80	99,13			
	WRKIPHTM	KU-BAND I CHAHNEL 84PH/TM	S1	99,13			
	WRKOF P	KU-BAND OFF/ON	S2	99,13			
	WRXOFF	X-BAND OFF/ON	83	99,13	-		
	HRXQTHMS	X-BAND Q CHANNEL TM/MSS	S6	99,13	-		
	WRXIPNTM	X-BAND I CHAHNEL 84PN/TM	35	99,13			
	WRCZDENA	COMMAND ENA/DIS STATUS (11-ENABLE)	2-98	99,13			
WB-05		BILEVEL WORD O1:					09-32
	WPKUPCON	KU UP CONV PRIMARY ON/OFF	0	99.03	-		09-32
	WPKTYTA	KU TWIA PRIMARY ON/OPP	B1	99,05	-		09-33
	WPATPRO	AUTOTRACK PRED SOURCE PRIMARY ON/OFF	B2	90.08	-		09-36
	WPATDCOM	AT DOWN CONV PRIMARY ON/OFF	B3	99.03	-		09-35
	WPATCHB	AUTOTRACK COMBINER PRIMARY ON/OFF	1	99.05	-		09-36
	WPR PGDH	HEATERS PRIMARY RPC/GDA ON/OFF	85	99,05	-4		09-37
	WPXTWTAH	HEATERS PRIMARY X-BAND TWTA ON/OFF	9	99,05	-		09-38
	WPWBMH	HEATERS PRIMART WOM (PSUGGDE) ON/OFF	B7	99,05			09-39
4B-06		BILEVEL WORD 02:		•			09-60
	WPLDCNAB	PSU PRIMARY LOADS TO PWR CONV A/B	9	99,12	.=		09-40
	WPXTWTA	X BAND TWIA PRIMARY ON/OFF	81	99,12			19-60
	WRXMOD	K-BAND UQPSK MOD PRIMARY ON/OFF	B2	99,12			09-42
	WPXFRQ	X-BAND FREQ SOURCE AMP PRI ON/OFF	B3	99,12			09-43
	WPKFRO	KU-BAND FREG SOURCE AMP PRI ON/OFF	B4	99,12			44-60
	WPKWOD	KU-BAND UQPSK MOD PRIMARY ON/OFF	B5	99,12			09-45
	WPDSU	DSU PRIMARY ON/OFF	98	99,12	~		94-60
	WPATRCR	AUTOTRACK RCVR PRIMARY ON/OFF	B7	99,12	-		09-47
VB-07		BILEVEL WORD 03:		•			89-60
	WPGRPE	CDE/RPE PRIMARY ON/OFF	9	99,29	-		89-60
	WPYOTBUS	CDE MOTOR DRIVE PRIME BUS PHR ON/OFF	B1	99,29	-4		69-60
	WPCMDPRC	PSU PRIMARY CMS PROC ON/OFF	B2	99,29			08-80
	WPSAFEEN	PSU PRIMARY SAFEHOLD ENA/DISAB	B3	99,29	,- 4		15-60
	HKDATS3N	CX SW3 AT-DNCNV/ATR CABLE NORM/CROSS	9	99.29	-		09-52
	WFSKUS 58	CX SW5 PS/RU-UPCNV CABLE NORM/CROSS	85	99,29	7		09-53
	WXMKUS 6N	CX SW6 UOPSK/KU-UPCN CABLE NORM/CROSS	B6	99,29	,=		09-34
			•		•		22.00

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USER ID	ACRONYM	TLM FUNCTION DESCRIPTION	TIPE	COL, ROW	RATE	×	RIU-CH
80-85		BILEVEL WORD 04:					09-56
	WKTWSPR	MC SWITCH 2 KU-TWIA PRIME/REDUNDANT		99,43			09-56
	WPKPROOV	KU PREO SOURCE OSC/OVEN PRIMARY ON/OFF	7-8	69.69	-		09-58
	WCXWGI30R	COAX/WG SHITCH POSITION MORM/CROSS		99,43	~		09-29
	WPXFRQOV	K-PREQ SOUPCE OSC/OVER PRIMARY CH/OFP	B4	99,43	-		9
	WXUPSSBH	CX SHB X-U2CHV/X-14TA CROSSED/HORM	Ĩ	9,43	,		19-60
	MPGHDZ	GDE/MDE PRIMARY ON/OFF	9-6	99,43	-		09-67
WB-09		BILLEVEL WORD 05:					96-60
	WRKUPCON	AT UP CONV REDUNDANT ON/OFF	7	19'66			96-60
	HRKTWTA	AT TUTA REDUNDANT ON/OFF	B-1	19,66	~		26-60
	WRATPRO	AUTOTRACK PREQ SOURCE REDUNDANT ON/OFF	B2	19,66	-		09-98
	WRKDNCON	AT DOWN CONV REDUNDANT ON/OFF	B_3	99,61	-		66-60
	WRATCHEE	AUTOTRACK COMBINER REDUNDANT 011/0FF	- A	99,61			001-60
	WRRPCDH	HEATERS REDUNDANT RFC/CDA ON/OFF	B5	99,61	-		101-60
	WRXTWTAH	HZATERS REDUNDANT X-BAND TUTA ON/OFF	98	99,61	-		09-102
	VRVBACH	HEATERS REDUMDANT WEN (PSUGGE) OH/OFF	B7	19.66	-		09-103
W-10		BILLARL WORD 06:					9-104
	WRLDCNAB	PSU REDUND LOADS TO PUR CONV A/B	7	99.75	-		101-60
	WRXTWIA	X-BAND THIA REDUNDANT ON/OFF	1-1	99,75	,		9-105
	WRXHOD	X-BAND UQPSK KOD REDUNDART ON/OFF	82	99,75	~		901-60
	WRXPRQ	I-BAND FREQ SOURCE AMP RED ON/OFF	[99,75	-		09-107
	WRKJ'RQ	KU-BAND PREQ SOURCE AMP RED ON/OFF	4	99,75	-		09-108
	WRXXXDD	QU-BAND UQPSK MOD REDUNDANT ON/OFF	BS	99,75	~		09-109
	WRDSU	dsu redundant on/off	B6	99,75	,-d		03-110
	WRATRCR	AUTOTRACK RCVR REDUNDANT ON/OZP	B-7	99,75	-		111-60
HB-11		BILZVEL GORD 07:					09-112
	WRCRPE	CDZ/RPE REDUNDANT ON/OFF	0	99,80	-		09-112
	HRMOTBUS	CDE POTOR DRIVE RED. BUS PAR ON/OFF	10	99,80	-		05-113
	WRCHOPRC	PSU REDUNDANT CHD PROC OH/OFF	B2	99,80	,		09-114
	HRSAFEEN	PSU REDUNDANT SAFEHOLD ENABLE/DISAB	<u>n3</u>	99,80	-		09-115
	WATKD34N	-	B	99,80	-4		911-60
	WKUPSSIN	CX SWI KU-UPCIIV/FS CABLE CROSS/NORM	88	99,80	-		09-117
	WKUKMS219		B6	99,80	~		09-118
	WKXWSEN		B7	99,80			611-60
WB-58	•	BILEVEL WORD 08:		ı			09-170
	WKDWSPR	WG SHITCH I KU-DISCNV PRINE/REDUNDANT	ÿ	69,66	~ 4		09-120
	WRIUM: TB	RIU 09 MATE STANDBY 1/0PP		99,49	-		09-121
	WRKPROOV	KU-PREQ SOUNCE OSC/OVEN REDUNDANT ON/OFF	B2	99,49			09-122
	WRXPROOV	X-PREO SOURCE OSC/OVEN REDUNDANT ON/OFF	B6	99,49	~		09-124
	WPSXUS718	CK SW7 X-PS/X-UPCNV LO CROSSED/NORM	B5	69,66	-		09-125
	50000	מסט/אט בייועמוונמם מעז/מטי	4	00	_		09-126

Table 2-31. WDCS Telemetry List

Table 2-31. WBCS Telemetry List

Table 2-31. WBCS Telemetry List

co.			
ADDRESS RIU-CH	09-02 09-62 09-67 09-67		
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SNPL RATE	4444		
HTX LOC	99,23 99,24 99,25 99,26		
SGNL TY PE	ALOG ALOG ALOG		
TLM PUNCTION DESCRIPTION	AUTOTRACK RCVR PRIMART ELEV ERBOR AUTOTRACK RCVR REDUNDANT ELEV ERBOR AUTOTRACK RCVR PRIMARY AZIM ERROR AUTOTRACK RCVR REDUNDANT AZIM ERROR		
ACRONYM	WPATELER WRATELER WPATAZER WRATAZER		
USER ID	KB-54 WB-55 WB-56 WB-57	2-157	

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> Teble 2-32 TM THEMATIC MAPPER

Table 2-32. TH Telemetry List

USER 10	ACRONTH	TLM PUNCTION DESCRIPTION	SCHL	MTA LOC COL, ROW	SMPL	×	Address Riu-Ch
TM-101	TWORDA	SERIAL WORD A: NOT USED (DIGITAL 1 WHEN TH OH) THERMAL SHUTDOWN E::ABLED/DISABLED	֝֞֟֞֟֝֓֓֓֓֟֟֝֓֓֓֓֟֟֟ <u>֚</u>	32,20 32,20			08-00
	TSHA+2ST TSHA-2ST	SMA +2 HEATER CONTROLLER ON/OFF SMA -2 HEATER CONTROLLER ON/OFF	S-2 S-3	32,20 32,20	e-4		
	TSCRSTAT	SERIAL COMMAND RECEIVER I ON/OFF SHUTTER PUSIBLE LINK SWA CLOSED/OPEN	S-4 S5	32,20 32,20	e1 e1		
	TSHFZLKB TSHFZLKC	SHUTTER PUSIBLE LINK SWB CLOSED/OPEN SHUTTER FUSIBLE LINK SWC CLOSED/OPEN	8 8 1 8	32,20			
TH-102	THORDS	SERIAL FORD B:	9		•		.00
	TBDSTAT2	BAND 2 ON/OFF		32,21 32,21	- -		10-80
	TBDSTAT3	BAND 3 ON/OFF	S2	32,21	~		
	TRDSTATA	BAND 4 ON/OFF		32,21	, ,		
	TEDSTAT6	BAND 6 ON/OFF	S - S	32,21	4 -4		
	TBDSTAT7	BAND 7 ON/OFF	3-6	32,21	~-		
TM-103	TWORDC	SERIAL WORD C:	6	17,12	4		
: !-1	TDOORCLS	COOLER DOOR CLOSED/OPEN	0.	32,22	٠.		08-02
	TDOORGAS	COULER MODE FULL OPEN/NOT MILL OPEN	֓֞֞֞֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֟֓֓֓֓֓֓	32,22			
	TOOOREM	COOLER DOOR MAGHET ON/OFF	S3	32,22	•		
	TDOORNTR	COOLER DOOR HOTOR ON/OFF	S6	32,22	-		
	TORPZLKA	COOLER DOOR FUS LINK SHA CLOSED/OPEN	S Y	32,22	-		
	TDRFZLKC	COOLER DOOR FUS LINK SWC CLOSED/OPEN	S S	32,22	٠		
TH-104	TWORDD	SERIAL WORD D:		•			
	TLIPSTI		2	32,23	-		08-03
	TLMPSTZ		- S	32,23	 -		
	TIMPORT	CAL LAND 1 OVERRIDE ON/OFF	֓֞֞֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	32,23	- ٠		
	TLAPOR2	CAL LAMP 2 OVERRIDE ON/OFF	88	32,23	-		
	TLMPOR 3	CAL LAND 3 OVERRIDE OH/OPP	SS	32,23			
	TLAPSEQ	CAL SEQUENCER ON/OFF	8-6	32,23	-		
i	THUXHID	MULTIPLEXER ON/OFF (BACKUP)	S7	32,23	-		
TH-103	TIMETAT	SERIAL WORD E:	6	32.24	-		90-80
	TLVOTST	LVDT ON/OFF	S1	32,24			•
	TBBSET	BLACKBODY ON/OFF	22	32,24	-		
	TBBSET2	BLACKBODY T2 ON/OFF	S3	32,24			
	TRESELS	BLACKBODI IS ON/OFF	מווי	32.29	-		

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BLACKBODY BACKUP ON/OFF SHE I OH/OFF SHE IA WORD F: BAFFLE HEATER CONTROLLER ON/OFF BAFFLE HEATER CONTROLLER ON/OFF MACRODISCHETE CDD CEN A RED OH/OFF MACRODISCHETE CDD CEN B RED OH/OFF MACRODISCHETE OH/OFF A MIDSCAN PULSE OH/OFF CAL SHUTTER PHASE ERROR YES/NO B CAL SHUTTER OH/OFF COLD STACE HEATER CONTROLLER OH/OFF INTER STACE HEATER CONTROLLER OH/OFF COLD PPA TE EMETRY OH/OFF COLD PPA TELEM	TSRE ID ACRONYM TSREINF TSREINF TSREINF TSREINF TSREINF TROCASLE TROCASLE TROCASLE TROCASLE TROCASLE TROCASLE TSLCSEL TSCCCTLR	NOTION DESCRIPTION DDT BACKUP ON/OFF ON/OFF ON/OFF ON/OFF ON/OFF HEATER CONTROLLER ON/OFF HEATER CAD GEN A PRI ON/OFF ISCIENTE CAD GEN A PRI ON/OFF ISCIENTE CAD GEN B PRI ON/OFF ISCIENTE CAD GEN B RED ON/OFF ISCIENTE CAD GEN B RED ON/OFF ISCIENTE CAD GEN B RED ON/OFF ISCIENTE ON/OFF INTER PHASE REGOR TES/NO UNTER AMPLITUDE ERROR YES/NO SUITTER AMPLITUDE ERROR YES/NO SUITTER AMPLITUDE ERROR YES/NO		COL, ROH 32, 12, 12, 12, 12, 12, 12, 12, 12, 12, 1	BATE HALL HALLHAR		로 보고
TSREIN	TBBBU TSHEINF TSHEZNF TSHEZNF TSHEZNF TROCASLF TMCCASLR TMCCASLR TMCCASLR TMCCASLR TMCCASLR TMCCASLR TMCCASLR TMCCASLR TMCASLP TMCCASLR TMCASLR TCALCRIC	ODT BACKUP ON/OFF GH/OFF WORD F: HEATER CONTROLLER ON/OFF HEATER CONTROLLER ON/OFF HEATER CONTROLLER ON/OFF HEATER CONTROLLER ON/OFF HEATER CON GEN A RED ON/OFF HISCELTE COD GEN B RED ON/OFF HISCELTE COD GEN B RED ON/OFF HISCERTE COD GEN B RED ON/OFF HISCERTOR ON/OFF HITTER ANTHEITUDE ERROR YES/NO HITTER ANTHEITUDE ERROR YES/NO		32 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		Ö	\$ \$
TSSELIR SEE 1 GN/OFF	FSHEIRP TSHEZNF TSHEZNF TWORDF THOCASLP THOCASLR THOCASLR THOCASLR THOCASLR THOCASLR THOCASLR THOCASLR TSLCSBLI TSCCALHBER TGCALHBER TGCALHBER TGCALHBER TGCACHBER TGCAC	CH/OFF ON/OFF WORD F: HEATER CONTROLLER ON/OFF HEATER BACKUP ON/OFF HISCIRITE CAD GEN A REL OH/OFF HISCIRITE CAD GEN B REL OH/OFF HISCIRITE ON/OFF HITTER ANTOLITUDE ERROR YES/NO HITTER ANTOLITUDE ERROR YES/NO		21	~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Š.	\$ \$
TSRZAP SEE 2 ON/OFF TOOLOGY SET ALL WORD P.	15MEZNF 1400P 1400P 1400P 1400P 1400BP 1400BP 1400BP 1400BP 1500BP 1400BP 1500BP 1600BP	ON/OFF WORD F: WORD F: HEATER CONTROLLER ON/OFF ISCIETE CAD GEN A PRI ON/OFF ISCIETE CAD GEN A RED ON/OFF ISCRETE CAD GEN B RED ON/OFF IN PULSE ON/OFF INTER ONRECTOR 1 ON/OFF INTER ANTITUBE GROW TES/NO UNITER ANTITUBE GROW TES/NO ONLOTER ANTITUBE GROW TES/NO		12. 22.22.22.22.22.22.22.22.22.22.22.22.2		80	ş ş
THOURD THOURD THOURD THOURD THOURD	F-106 TWONDF TBAPHTRC TBAPHTRD TWCGASLP TWCGASLP TWCGASLR TWCGASLR TWCGASLR TWCGASLR TWCGASLR TWCGASLR TWCGASLR TWCGASLR TWCGASLR TSLCSEL1 TSCALPHER TBUPHER TGLAHPER TGCACHTR TGLAHPER TGCACHTR TGCACHTR TGCACHTR TGCACHTR TGCACHTR TGCACHTR	HEATER CONTROLLER ON/OFF HEATER CONTROLLER ON/OFF HEATER CAD GEN A PRI ON/OFF HISCRIETE CAD GEN B RED ON/OFF HIST CORRECTOR 1 ON/OFF HIST CORRECTOR 2 ON/OFF HISTER ANHOFF HITTER ANHOFF		222 222 222 222 222 222 222 222 222 22		ġ O	\$ \$
TRANSTER BAYER BACKUP ON/OFF S1 31,25 1	TBAPHTRC TBAPHTRB TMCGASLP TMCGASLR TMCGASLR TMCGASLR TMCGASLR TMCGASLR TMCGASLR TMCGASLR TMCGASLR TMCGASLR TSLCSEL1 TSCALPHER TBUPHER TGLODH TCSCCPUR TCSCCPUR TCSCCPUR TSCALL	HEATER CONTROLLER ON/OFF HEAVER BACKUP ON/OFP HISCIETE CAD GEN A RED ON/OFF HISCRETE CAD GEN B RED ON/OFF HISTRE ON/OFF HISTRE ANHOFF HITTER ANHOFF		2	M M M M M M M M	8	\$ \$
THOCASLP MACRODISCRETE CAD GEN A PRI ON/OFF S	TBAPHTRB THCGASLP THCGASLR THCGASLR THCGASLR THURBA TSLCSEL1 TSCALPER TBUPHER TBUPHER TGSCFFR TGSCFFR TGSCFFR TGSCFFR TGSCFFR TSCCFFR TSCCFFR TSCCFFR TSCCFFR	HEAVER BACKUP ON/OPP 11SCHEIE CAD GEN A PRI ON/OPP 11SCHEIE CAD GEN A RED ON/OPP 11SCHEIE CAD GEN B RAID ON/OPP 11STER ON/OPP 11STER ONLOPP 11TER ANTITURE RAID 11STER PHASE ERROR TES/NO		22			%
THICASLP MACRODISCRIFT CDD CEN A REI ON/OFF S2 31,25 1	THCGASLP THCGASLR THCGASLR THCGASLR THCGASLR THCGASLR THCGASLR TSLCSELI TSLCSELI TSLCSELI TSLCSELI TSLCSELI TSLCSELI TSLCSELI TCALPHER TCALPHER TBUPHER TBUPHER TGASCPHR TCSCOTLR TCSCOTLR TCSCOTLR	ISCRETE CHO GEN A PRI ON/OFF ISCRETE CHO GEN B RAI ON/OFF ISCRETE CHO GEN B RAI ON/OFF ILECRATE CHO GEN B RED ON/OFF ILECRATE CHO CEN B RED ON/OFF ILECRATE ON/OFF IN CORRECTOR 1 ON/OFF INTER CORRECTOR 2 ON/OFF INTER PHASE RROR TES/NO ONTITER APPLITUDE ERROR YES/NO ONTITER APPLITUDE ERROR YES/NO		22 22 22 22 22 23 22 23 23 23 23 23 23 2			%
THICASLE MACRODISCRETC GEO GEN B RED GN/OFF S4 312.35 1	THCGASLR	NISCRETE CYG CEN A RED ON/OFF ISCRETE CYG CEN B REI ON/OFF ISCRETE CYG CEN B RED ON/OFF IN PULSE ON/OFF (PRIMARY) IN PULSE ON/OFF (PRIMARY) IN CORRECTOR I ON/OFF INTER CORRECTOR 2 ON/OFF INTER AMPLITUDE ERROR YES/NO OUTTER AMPLITUDE ERROR YES/NO		22 22 22 22 22 23 23 24 25 25 25 25 25 25 25 25 25 25 25 25 25			%
THICCESLE MACRODISCRET CAD CRN B REI ON/OPP S4 31,75 1	THCCBSLR THCCBSLR THCCBSLR THCCBSLR THOSE TELCSELI TELCSELI TCALPHER TCALPHER TEBUFHER TBUFHER TEBUFHER TESCFFF	NISCRETE CHO CEN B PRI ON/OFF ILEXER ON/OFF IN PULSE ON/OFF IN PULSE ON/OFF IN CHILD CHILDRY IN CORRECTOR 1 ON/OFF INTER ONRECTOR 2 ON/OFF INTER PHASE ERROR YES/NO OUTTER APPLITUDE ERROR YES/NO OUTTER APPLITUDE ERROR YES/NO		32,75 32,75 32,75 32,75 32,75 32,75 32,75 32,75			%
THICRESIL MACRODISCRETT COD CEM B RED ON/OFF S-6 31,25 1	THCCBSLR THCCBSLR THCCBSLR THCCBL TSLCSBL1 TSLCSBL2 TSLCSBL2 TSLCSBL2 TSLCSBL2 TSLCSBL2 TSLCSBL2 TSLCSBL3 TSLCSBL3 TSLCSBL3 TSLCSBL3 TSLCSBL3 TSLCSBL3 TSLCSBL3 TSLCSBL3 TSCSCBL3 TSCSCBCBL3 TSCSCBCBCBL3 TSCSCBCBCBCBCBCBCBCBCBCBCBCBCBCBCBC	NECRETE CHO CEN B RED ON/OFF 'LEXER ON/OFF H PULSE ON/OFF H PULSE ON/OFF INE CORRECTOR 1 ON/OFF INE CORRECTOR 2 ON/OFF UNTER PHASE ERROR YES/NO STITTER APPLITUDE ERROR YES/NO ONLOFF	377 277	32,25 32,25 32,26 32,26 32,26 32,26			9 0-
HUNGREAD HULTIPLEZER ON/OFF PRIMARY S-6 31,25 1 HUSCARIA HUDGAR PULSE ON/OFF PRIMARY S-7 31,25 1 TALCSELIZ SCAL LINE CORRECTOR 2 ON/OFF S-7 31,26 1 TALCSELIZ SCAL LINE CORRECTOR 2 ON/OFF S-7 31,26 1 TCALPHER CAL SHUTTER PRIMER ERROR YES/NO S-3 31,26 1 TCALPHER CAL SHUTTER PRIMER ERROR YES/NO S-4 31,26 1 TCALPHER ACKUP SHUTTER PRIMER ERROR YES/NO S-6 31,26 1 TUGARAPER ACKUP SHUTTER PRIMER ERROR YES/NO S-6 31,26 1 TUGARAPER ACKUP SHUTTER PRIMER ERROR YES/NO S-6 31,26 1 TUGARAPER ACKUP SHUTTER PRIMER ERROR YES/NO S-6 31,26 1 TUGARAPER ACKUP SHUTTER PRIMER ERROR YES/NO S-6 31,26 1 TUGARAPER ACKUP SHUTTER PRIMER ERROR YES/NO S-6 31,26 1 TUGARAPER ACKUP SHUTTER CONTROLLER ON/OFF S-7 31,26 1 TUGARAPER ACKUP SHUTTER CONTROLLER ON/OFF S-7 31,27 1 TUGARAPER ACKUP SHUTTER CONTROLLER ON/OFF S-7 31,27 1 TUGARAPER ACKUP SHUTTER CONTROLLER ON/OFF S-6 31,27 1 TUGARAPER ACKUP SHUTTER CONTROLLER S-6 31,28 1 TUGARAPER ACKUP SHUTTER CONTROLLER S-6 31,28 1 TUGARAPER ACKUP SHUTTER CONTROLLER S-6 31,28 1 TUGARAPER ACKUP SHUTTER ACKUP SHUTTER ACKUP SHUTTER A SHABLE/DISABLE S-6 31,28 1 TUGARAPER ACKUP SHUTTER A SHABLE/DISABLE	-107	"LEXER ON/OFF H PULSE ON/OFF (PRIMARY) HODD G: HOD G: HOD GRECTOR 1 ON/OFF INTE CORRECTOR 2 ON/OFF UTTER OH/OFF UTTER PHASE ERROR YES/NO CHIPTER APPLITUDE ERROR YES/NO		32,25 32,26 32,26 32,26 32,26			%
WASCLEAN HUISCAN PULS 03/0PF (PRIMARY) 8-7 32,25 1	-107	H PULSE ON/OFF (PRIMARY) HOED C: LINE CORRECTOR 1 ON/OFF LINE CORRECTOR 2 ON/OFF ULITER ON/OFF ULITER PHASE EREOR YES/NO CULTER APPLITUDE ERROR YES/NO		32,26 32,26 32,26 32,26 32,26	-		%
FLOURED TRUBD G:	107 TWORDG TSLCSEL TSLCSEL TSLCSEL TSLCSEL TCALPHER TGLAPHER TBUPHER TBUPHER TBUPHER TBUPHER TBUPHER TBUPHER TGCATLR TCSCATLR TCSCATLR TGCATLR T	HORD G: LINE CORRECTOR 1 ON/OPP LINE CORRECTOR 2 ON/OPP UNITER ON/OPP UNITER PHASE ERECR YES/NO UNITER APPLITUDE ERROR YES/NO]];]]]	32,26 32,26 32,26 32,26			8
TSLCSELL SCAN LINE CORRECTOR ON/OFF S0 31,26 1	TSLCSEL1 TSLCSEL2 TSLCSEL2 TCALSHER TCALSHER TEUSHTR TBUPHERR TBUPHERR TBUPHERR TGSCTLR TCSCCTLR TCSCCTLR TCSCCTLR	.INE CORRECTOR 1 ON/OPP. INT CORRECTOR 2 ON/OPP. UNITER OH/OPP. UNITER PHASE EREOR TES/NO. CHITTER AMPLITUDE ERROR YES/NO.		32,26 32,26 32,26 32,26			8
TSLCSRL SCAN LIKE CORRECTOR 2 ON/OPF S1 31,26 1	TSLCSEL2 TCALSHER TCALSHER TCALSHER TGALSHER TBURHERR TBURHERR TBURHERR TBURHERR TGSCHILR TCSCCHIR	INT CORRECTOR 2 ON/OFF UNITER OH/OFF UNITER PHASE ERROR YES/NO FOR THER AMPLITUDE ERROR YES/NO OF CHITTER AMPLITUDE	S-2 S-3	32,26 32,26 32,26		80	
TCALSHER CAL SHUTTER OB/OFF TCALPHER CAL SHUTTER OB/OFF TCALPHER CAL SHUTTER AREACE READR YES/NO	TCALSHTR TCALCHER TCALCHER TGUSHTR TBUFHERR TBUFHERR TGSCFUR TCSCFUR TCSCFUR TCSCFUR TCSCFUR TCSCFUR	UTTER OH/OFF UTTER PHASE ERROR YES/NO TITER AMPLITUDE ERROR YES/NO OFFICER OFF	S-2 S-3	32,26 32,26	-		
TCALPHER CAL SHUTTER PHASE BROR TES/NO S3 32,26 1	TCALPHER TCALMPER TEUSHTR TBUPHER TBUPHER TEUAPER TCSCHILE TCSCFHR TCSCFHR TCSCFHR	IUTTER PHASE ERROR YES/NO IUTTER AMPLITUDE ERROR YES/NO CHITTER AN AMPLITUDE	53	32,26	-	•	
TCALAMPER CAL SHUTTER AMPLITUDE ERROR YES/NO S4 32,26 1	TCALAMPER TEUSHTR TEUSHTR TEUPHERR TEUPHERR TCSCATLR TCSCCPHR	IUTTER AMPLITUDE ERROR YES/NO		30 06			
TBUSHTR BACKUP SHUTTER ON/OFF S5 32,26 1	TEUSHTR TBUPHERR TBUANER TVOEDH TCSCATLR TCSCOPUR TCSCOPUR TCSCATLR	Contracto on loss	75	34,40			
TBUPHERB BACKUP SHITTER PHASE ERROR YES/HO S6 31,26 1	TBUPHERR TBUANPER T-108 TVGEDH TCSCNTLR TCSCCPRR TCSCCPRR	SHOLLER ON OFF	SS	32,26	-		
TBUANFER BACKUF SHTR AMPLITUDE ERROR YES/NO	TEUANPER TYORDH TCSCNTLR TCSCOPUR TISCUTLR	SHUTTER PHASE ERROR TES/HO	86	32,26	-		
TWORDH SERIAL WORD H:	TWORDH TCSCNTLR TCSGCPUR TISCNTLR	SHTR AMPLITUDE ERROR YES/NO	87	32,26			
TCSCATLR COLD STAGE HEATER CONTROLLER GN/OFP S0 32,27 1 TCSCGPUR COLD STAGE OUTGAS PUR ENGLED/DISAB S1 32,27 1 TISCATL INTER STAGE HEATER CONTROLL ON/OFP 82 32,27 1 TISCATRL INTER STAGE HEATER CONTROLLER ON/OFP S3 32,27 1 TCFPA COLD FPA 12 01/OFF S5 32,27 1 TCFPA1 COLD FPA 12 01/OFF S5 32,27 1 TCFPAT COLD FPA TELEMETRY ON/OFF S5 32,27 1 TCFPATLM COLD FPA TELEMETRY ON/OFF S5 32,27 1 TCFPATLM COLD FPA TELEMETRY ON/OFF S5 32,27 1 TUMENT INCHWORN EXTEND ENABLED/DISABLED S7 32,28 1 TIMENA INCHWORN 2 ENABLE/DISABLE S2 32,28 1 TUMENA INCHWORN 1 ENABLE/DISABLE S2 32,28 1 TCCOLDRO COOLER DOOR HOVE/INHIBIT S5 32,28 1 TCCOLDRO COOLER DOOR OVE/INHIBIT S5 32,28 1 TWORD SERIAL WORD J: SCALE AND S5 32,28 1 TWORD SERIAL WORD J: S5 32,29 1 TUMENON INDECAN PULSE A ENABLE/DISABLE S5 32,29 1 TUMENON INCHWORN HOVE/INHIBIT S5 32,29 1		. KOTO H:					
TCSGCFUR COLD STACE OUTGAS PAR EMASLED/DISAB S1 32,27 1		ITACE HEATER CONTROLLER ON/OFF	9	32,27		8	-01
TISCUTLR INTER STACE HEATER CONTROL ON/OFF S2 31,27 1		TAGE OUTGAS PUR ENABLED/DISAB	S1	32,27	~		
TISCATEL INTER STACE HEATER CONTROLLER ON/OFF S4 31,27 1	•	STACE HEATER CONTROL ON/OFF	82	32,27	~		
TCPPA	Ī	STACE MEATER ENABLED/DISABLED	83	32,27			
TUPPAZ COLD PPA 12 OH/OPP TUPPAZ COLD PPA 13 OH/OPP TUPPAZ COLD PPA 13 OH/OPP TUPPAZ COLD PPA 13 OH/OPP TUPPAZ COLD PPA 15 OH	_	PA HEATER CONTROLLER ON/OFF	S	32,27	~		
TCPPA3	_	PA T2 OH/OPP	S-5	32,27			
TCPPATLM COLD FPA TELEMETRY ON/OFF S7 32,27 1 TWORDI SERIAL WORD I: TIVEXT INCHWORM EXTEND EMABLED/DISABLED S0 32,28 1 TIVEXT INCHWORM EXTEND EMABLED/DISABLE S1 32,28 1 TIVENA2 INCHWORM 2 EMABLE/DISABLE S2 32,28 1 TIVENA1 INCHWORM 1 EMABLE/DISABLE S2 32,28 1 TCOOLDEM COOLER DOOR HOVE/INHIBIT S5 32,28 1 TCOOLDEM COOLER DOOR OPEH/CLOSE S5 32,28 1 TNSCREWA MIDSCAN PULSE & EMABLE/DISABLE S5 32,28 1 TWORDJ SERIAL WORD J: SONS SERIAL WORD J: SONS 32,29 1 TWORDJ NOT USED SERVINIBIT S6 32,29 1	_	PA T3 ON/OFF	s6	32,27			
THORDI SERIAL WORD 1: THORDI SERIAL WORDI SERIAL WORDI SERIAL WORDI SERIAL WORDI SERIAL WORDI SERIAL WORDI SERIAL SERIAL WORDI SERIAL	TCPPATIM	PA TELEMETRY ON/OFF	87	32,27	~		
TIWEXT INCHWORM EXTEND ENABLED S0 32,28 1	TAORDI	. KORD I:					
INTERNA		IRM EXTEND ENABLED/DISABLED	9	32,28		ė	8
TIMENA2 INCHWORM 2 ENABLE/DISABLE S2 31,28 1 TIMENA1 INCHWORM 1 ENABLE/DISALE S3 32,28 1 TOOLDEM COOLER DOOZ MOVE/INBIBIT S4 31,28 1 TOOLDEM COOLER DOOZ OPEH/CLOSE S5 31,28 1 TMSCRENA MIDSCAN PULSE B ENABLE/DISABLE S6 31,28 1 TMSCAENA MIDSCAN PULSE A ENABLE/DISABLE S6 32,28 1 TWORDJ SERIAL WORD J: SO-5 32,29 1 TIMENOVE INCHWORM MOVE/INHIBIT S6 32,29 1		IRM 3 ENABLE/DISABLE	S1	32,28			
TIWENAI INCHWORM I ENABLE/DISALIK S3 31,28 1 TCOOLDEM COOLER DOOZ MOVE/INHIBIT S4 32,28 1 TCOOLDEM COOLER DOOZ OPEH/CLOSE S5 31,86 1 TMSCERNA MIDSCAN PULSE B ENABLE/DISABLE S6 32,28 1 TWORDJ SERIAL WORD J: SCALL WORD J: SO-5 32,29 1 XIWMOVE INCHWORM MOVE/INHIBIT S6 32,29 1		IRM 2 ENABLE/DISABLE	S2	32,28			
TCDOLDEM COOLER DOOG MOVE/INHIBIT S-4 32,28 1 TCDOLDEO COOLER DOOS OPEN/CLOSE S5 32,28 1 TKSCEZNA MIDSCAN PULSE B ENABLE/DISABLE S6 32,28 1 TWORDJ SERIAL WORD J: SON SON SERIAL WORD J: SON SON SON SERIAL WORD J: SON	•	NEW I ENABLE/DISALLE	33	32,28			
TCOOLDRO COOLER DOOR OPEN/CLOSE S5 31,26 1 THSCRENA KIDSCAN PULSE B ENABLE/DISABLE S6 32,26 1 THSCAENA KIDSCAN PULSE A ENABLE/DISABLE S7 32,26 1 THORDJ SCRIAL WORD J: SO-5 32,29 1 ZIWROVE INCHUREN MOVE/INHIBIT S6 32,29 1	_	1 DOOR MOVE/INSIBIT	S-6	32,28			
TMSCRENA MIDSCAN PULSE B ENABLE/DISABLE S6 32,28 1 TMSCAENA MIDSCAN PULSE A ENABLE/DISABLE S7 32.28 1 TWORDJ SERIAL WORD J: SO-5 32,29 1 TMWROVE INCHWORM MOVE/INHIBIT S6 32.29 1	_	DOOR OPEN/CLOSE	S5	32,28	~		
TMSCAENA MIDSCAN PULSE A ENABLE/DISABLE S7 31.28 1 TWORDJ SERIAL WORD J: SO-5 32,29 1 TIWROVE INCHWORM MOVE/INHIBIT S6 32.29 1	_	IN PULSE B ENABLE/DISABLE	36	32,28			
TWORDJ SERIAL WORD J: NOT USED XIMMOVE INCHWORM MOVE/INHIBIT S6 32,29 1	_	IN PULSE A ENABLE/DISABLE	S-7	32.28	~		
NOT USED SO-5 32,29 1 INCHAORM MOVE/INHIBIT S6 32,29 1	TWORD	. WORD J:					
INCHAORA MOVE/INHIBIT	NOT USE	8	50-5	32,29	-	80	60
	TINNOVE INCHAOR	RM MOVE/INHIBIT	9-8	32,29	~		•

Table 2-32. TH Telemetry List

Table 2-32. TM Telemetry List

SCHL MTK LOC SMPL ADDRESS ION DESCRIPTION TYPE COL, ROW RATE M 1:TU-CH	INCHHORM CONTRACT ENABLED/DISABLED 32,29 1	THE MAN K CAN P
TLM PUNCTION DESCRIPTION	INCHWORM CONTRACT ENABLED/DI SERIAL WORD L: DC RESTORE HORMAL/NOT HORMAL FRANE DC RESTORE SELECTED FE SHA +2 HEATER ENABLED/DISABL SMA -2 HEATER ENABLED/DISABL SMA -2 HEATER ENABLED/DISABL MIDSCAN PULSS ON (REDUNDANT) SWE 1/2 SELECT SAN OR MACNET ROT USED (DICITAL I WHEN TH	25.27 C. WHRER 1 PO-P1 LSB P1-P2 LSB P1-P2 LSB P1-P2 LSB A TQR LSB A TQR LSB P2-P3 LSB P2-P3 LSB P2-P3 LSB P2-P3 LSB P2-P3 LSB P2-P3 LSB P3-P4 LSB P3-P4 LSB P3-P4 LSB P4-P5 LSB P5-P0 LSB
ACRONTH	TIWONT TEORDE TEORDE TEORSEL TTLUSCAL TSHA+ZEN TSHA+ZEN TSHA-ZEN TSHSCAN TSHSCAN	
USER ID	14-112	

Table 2-32. TH Telemetry List

1/2 SCR COUNT 1/2 SCR COUN		75,31 32,90 32,91 32,98 32,98 32,98 32,100 32,100 32,104 32,106 32,106 32,106		33	07-60 07-88 07-88 07-81 06-90 06-91 06-93 07-94 07-91 07-91 07-92 07-93 06-80
AND FRANCE TRAFF RELAY OFTICS TEMP RELAY OFTICS TEMP RELAY OFTICS TEMP RASS 31,91 RASS 31,100 RASS		32,92 32,92 32,92 32,94 32,98 32,100 32,104 32,104 32,104 32,105 32,106 32,106			07-80 07-81 06-90 06-91 06-92 07-93 07-94 07-91 07-91 06-81
RELAT OFTICS TEMP		32,94 32,94 32,94 32,99 32,100 32,100 32,104 32,104 32,106 32,106 32,106			07-61 06-91 06-92 06-93 06-93 07-82 07-82 07-82 07-82 06-81
POWER SUPPLY TEMP PASS 32,94 1		32,83 32,96 32,96 32,99 32,100 32,100 32,104 32,105 32,106 32,106 32,106 32,106			06-90 06-91 06-92 06-93 06-93 07-94 07-94 07-92 07-93 06-80
BAND 6 POST AMP TEMP		32,94 32,97 32,97 32,99 32,100 32,102 32,103 32,104 32,105 32,106 32,106			06-91 06-92 06-93 06-93 07-94 07-94 07-91 07-91 06-81
HUX RLECTRONICS TEHP HUX RLECTRONICS TEHP FASS 13,77 CAL LAPP DAIVE TEHP FASS 12,99 11 CAL LAPP DAIVE TEHP FASS 12,99 11 FASS 12,100 11 FASS		32,96 32,97 32,99 32,99 32,100 32,102 32,104 32,104 32,106 32,106			06-88 07-92 07-89 07-93 07-94 07-91 07-92 07-92 06-81
CAL LAMP DATER TEMP		32,97 32,98 32,98 32,100 32,102 32,103 32,104 32,106 32,106 32,106			06-09 07-69 07-69 06-93 06-93 07-94 07-91 07-91 06-81
CAL LAMP DRIVE TEMP PASS 32.95 1		32,95 32,98 32,99 32,100 32,103 32,104 32,79 32,105 32,106	때 때 때 제 제 제 제 제 제 제 제 제 제		06-92 06-93 06-93 06-93 07-94 07-91 07-92 06-81
PRIMARY MIRROR TEMP PASS 32,98 1		32,98 32,99 32,100 32,101 32,105 32,105 32,105 32,105 32,106			07-69 06-90 06-93 07-93 07-91 07-92 07-63 06-81
SECORDARY MIRROR MASK TEMP PASS 32,99 1		32,99 32,100 32,101 32,102 32,103 32,104 32,106 32,106 32,106			06-90 06-93 07-94 07-94 07-91 07-93 06-81
PASS 32,100 1 PRIMAT FIRROR TEMP PASS 32,101 1 AUGITATOR MASK TEMP PASS 32,102 1 TELESCOPE HOUSING TEMP PASS 32,103 1 TELESCOPE BASEPLATE TEMP PASS 32,104 1 TELESCOPE BASEPLATE TEMP PASS 32,104 1 TELESCOPE BASEPLATE TEMP PASS 32,104 1 SMA -Z HOUSING TEMP PASS 32,105 1 SMA -Z HOUSING TEMP PASS 32,105 1 SMA -Z HOUSING TEMP PASS 32,110 1 SMA -Z HOUSING TEMP PASS 32,110 1 SMA -Z HOUSING TEMP PASS 32,111 1 SMA PER PLOYOT -X TEMP PASS 32,111 1 SMA PER PROPER PASS 32,112 1 SLC TEMP PASS 32,112 1 COLL LAMP FILTERS TEMP PASS 32,114 1 COLLER DOOR TEMP PASS 32,114 1 COLLER DOOR TEMP PASS 32,114 1 EACKBOOT TEMP PASS 32,114 1 ALOG 32,14 1 SI PPA TEMP PASS 32,114 1 ALOG 32,74 1 ALOG 32,74 1 ALOG 32,74 1 ALOG 32,78 1 ALOG 32,81 1 ALOG 32	_	32,100 32,101 32,102 32,102 32,103 32,104 32,105 32,105 32,106			06-93 07-94 07-92 07-92 07-93 06-80 06-80
PRIMATY MIRROR MASK TEMP		32,101 32,102 32,103 32,104 32,79 32,105 32,106 32,106			07-94 07-82 07-82 07-91 07-83 06-80 06-81
AMDIENT PREAME TEMP (REVEN) PASS 32,102 1 TELESCORE HOUSING TEMP PASS 32,104 1 TELESCORE HOUSING TEMP PASS 32,104 1 CAL SHUTTER TEMP PASS 32,105 1 SMA -Z ROUSING TEMP PASS 32,106 1 SMA PLEX PIVOT -X TEMP PASS 32,110 1 SUNSHIRED TEMP PASS 32,110 1 FASS ASS PASS		32,102 32,103 32,104 32,79 32,105 32,106 32,111	A1 A1 A1 A1 A1 A1 A1		07-82 07-91 07-92 07-83 06-80 06-81
TELESCOPE HOUSING TEMP PASS 32,104 1 TELESCOPE BASEPLATE TEMP PASS 32,104 1 TELESCOPE BASEPLATE TEMP PASS 32,104 1 TELESCOPE BASEPLATE TEMP PASS 32,105 1 SMA +2 HOUSING TEMP PASS 32,105 1 SMA +2 HOUSING TEMP PASS 32,106 1 SMA +2 HOUSING TEMP PASS 32,106 1 SMA PLEX PIVOT +X TEMP PASS 32,110 1 SMA PLEX PIVOT -X TEMP PASS 32,112 1 COLL AMP FILTERS TEMP PASS 32,116 1 COLL AMP FILTERS TEMP PASS 32,116 1 TEMP PASS 32,	PASS PASS PASS PASS PASS PASS	32,103 32,104 32,104 32,105 32,106 32,111			07-91 07-92 07-83 06-80 06-81
TELESCOPE BASEPLATE TEMP PASS 32,104 11 CAL SHUTTER TEMP PASS 32,105 11 SMA AT HOUSING TEMP PASS 32,105 11 SMA AT HOUSING TEMP PASS 32,105 11 SMA PLEX PUVOT +X TEMP PASS 32,110 11 SMA PLEX PUVOT -X TEMP PASS 32,110 11 SMA PLEX PUVOT -X TEMP PASS 32,112 11 SMA PLEX PUVOT -X TEMP PASS 32,112 11 SUNSHIELD TEMP PASS 32,112 11 SUNSHIELD TEMP PASS 32,112 11 COLLAMP FILTERS TEMP PASS 32,113 11 COLLER AMBIENT STAGE TEMP PASS 32,115 11 COLLE BOOR TEMP PASS 32,115 11 COLLE AMBIENT STAGE TEMP PASS 32,116 11 ELACKBODY TEMP PASS 32,116 11 BLACKBODY TEMP	PASS PASS PASS PASS PASS	32,104 32,79 32,105 32,106 32,106			07-92 07-83 06-80 06-81
SAA +Z HOUSING TEMP	PASS PASS PASS PASS	32,79 32,105 32,106 32,111 32,111			07-83 06-80 06-81 06-82
SWA +Z HOUSING TEMP	PASS PASS PASS PASS	32,105 32,106 32,111 32,108			06-80 06-81 06-82
SMA - Z ROUSING TEMP SCAM ANGLE WONITOR TEMP SAM ELECTRONICS TEMP SMA FLEX PIVOT + X TEMP SMA FLEX PIVOT - X TEMP SMA FLEX PIVOT - X TEMP FASS 32,113 11 SLC TEMP COLLER ANDIENT STEMP COLLER ANDIENT STEMP FASS 32,112 11 COLLER ANDIENT STEMP FASS 32,114 11 COLLER ANDIENT STEMP FASS 32,115 11 PASS PASS PASS	32,106 32,111 32,108	 .		06-81 06-82	
SCAH ANGLE MONITOR TEMP	PASS	32,111 32,108	 .		06-82
SHA ELECTROHICS TEMP RASS 32,109 1 SHA PLEX PIVOT +X TEMP RASS 32,110 1 SUNSHIELD TEMP SUNSHIELD TEMP FASS 32,112 1 SLC TEMP COLER AMBIERT STAGE TEMP FASS 32,114 1 FASS 32,114 1 FASS 32,114 1 FASS 32,114 1 FASS 32,115 1 FASS 32,114 1 FASS 32,115 1 FASS 32	PASS	32,108	•		
SWA PLEX PIVOT +X TEMP PASS 32,109 1			~		68-83
SWA FLEX PIVOT -X TEMP FASS 32,110 1	PASS	32,109	~		06-34
SUNSHIELD TEMP SLC TEMP SLC TEMP SLC TEMP CAL LAMP FILTERS TEMP COOLER ANBIENT STACE TEMP FASS 32,115 1 COOLER ANBIENT STACE TEMP FASS 32,116 1 FAS	FASS	32,110	-		06-85
SLC TEMP 52, 112 1 5 1 2 6 5 1 1 2 6 5 1 1 2 6 5 1 1 2 6 5 1 1 2 6 5 1 1 2 6 5 1 1 2 6 5 1 1 2 6 5 1 1 2 6 5 1 1 2 6 5 1 1 2 6 1 1 1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1	PASS	32,113			96-90
CAL LAMP FILTERS TEMP PASS 32,114 1 1 COOLER ANDIERT STACE TEMP PASS 32,115 1 1 COOLER DOOR TEMP PASS 32,115 1 1 4 TEMP PASS 32,115 1 1 4 TEMP PASS 32,115 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PASS	32,112	~		07-84
COLER ANBIERT STEMP PASS 32,114 1 COOLER ANBIERT STACK TEMP PASS 32,115 1 COOLER ANBIERT STACK TEMP PASS 32,115 1 T RADIATOR FIN TEMP PASS 32,116 1 T CPPA CONTROL TEMP PALOG 32,118 1 ELACKBODY TEMP ALOG 32,74 1 SI FPA TEMP ALOG 32,74 1 ALOG 32,75 1 ALOG 32,80 1 COLD STACK TEMP A (COLD) ALOG 32,81 1 COLD STACK TEMP A (COLD) ALOG 32,82 1 ALOG 32,82 1		25	128	∞	
COOLER ANDIENT STAGE TEMP PASS 32,115 1 COOLER ANDIENT STAGE TEMP PASS 32,116 1 T +T RADIATOR FIN TEMP ALOG 32,119 1 ELACKBODY TEMP ALOG 32,74 128 6 T SI FPA TEMP ALOG 32,75 1 ALOG 32,78 1 ALOG 32,81 1 COLD STAGE TEMP A (COLD) ALOG 32,82 1 ALOG 32,82 1		32,114	-		07-05
COOLER DOOR TEMP PASS 32,116 1 1 +T RADIATOR FIN TEMP PASS 32,119 1 CT CPPA CONTROL TEMP ALOG 32,119 1 BLACKBODY TEMP ALOG 32,74 128 6 T SI FPA TEMP ALOG 32,75 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_	32,115	-4		07-93
T +Y RADIATOR FIN TEMP PASS 32,119 1 CT CPPA CONTROL TEMP ALOG 32,118 1 ELACKBODY TEMP ALOG 32,74 1 T SI FPA TEMP ALOG 32,75 1 ALOG 32,75 1 ALOG 32,75 1 ALOG 32,75 1 ALOG 32,78 1 ALOG 32,80 1 COLD STACE TEMP A (COLD) ALOG 32,82 1 COLD STACE TEMP B (HOT) ALOG 32,82 1	PASS		-4		07-94
CT CPPA CONTROL TEMP ALOG 32,118 1 BLACKBODY TEMP ALOG 32,74 1 T SI FPA TEMP ALOG 32,75 1 T CALIBRATION SHUTTER TEMP ALOG 32,78 1 BACKUP SHUTTER TEMP ALOG 32,80 1 COLD STACE TEMP A (COLD) ALOG 32,81 1 COLD STACE TEMP B (HOT) ALOG 32,82 1	PASS	32,119	-4		07-9
SI FPA TEMP	ALOG	32,118	, ha		06-100
T SI FPA TEMP ALOG 32,75 128 8 T CALIBRATION SHUTTER TEMP ALOG 32,78 128 8 BACKUP SHUTTER TEMP ALOG 32,80 1 50 128 6 COLD STAGE TEMP A (COLD) ALOG 32,81 1 6 COLD STAGE TEMP B (HOT) ALOG 32,82 1	PLO	34,14	7 00,	•	7/-00
T CALIBRATION SHUTTER TEMP ALOG 32,78 1 1 4 8 128 8 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	ALOC	32,75	170	0	06-73
T CALIBRATION SHUTTER TEMP ALOG 32,78 1 49 123 6 123 8 124 123 124 123 124 123 124 124 124 124 124 124 124 124 124 124		88	128	•	
49 129 6 BACKUP SHUTTER TEMP A (COLD) ALOG 32,80 1 COLD STAGE TEMP A (COLD) ALOG 32,81 1 COLD STAGE TEMP B (HOT) ALOG 32,82 1	ALOG	32,78	7	-	106-74
BACKUP SHUTTER TEMP ALOG 32,80 1 COLD STACE TEMP A (COLD) ALOG 32,81 1 COLD STACE TEMP B (HOT) ALOG 32,82 1		64	128	•	•
COLD STACE TEMP A (COLD) ALOC 32,81 1 COLD STACE TEMP B (HOT) ALOC 32,82 1	ALOC	32,80	T 01.	•	8-72
COLD STACE TEMP B (HOT) ALOG 32,82 1	2017	33 83	170	0	04-70
TOTAL STRUCK ITEM B (UNI)	307	32, 62	-		6 4 6 1 9 C
The state of the s		75,04	٠.		06190
TISCT INTERMEDIATE STACE TEMP A (COLD)			PASS ALOG ALOG ALOG ALOG ALOG ALOG	ALOG 32,119 ALOG 32,118 ALOG 32,74 ALOG 32,75 ALOG 32,78 ALOG 32,89 ALOG 32,81 ALOG 32,83 ALOG 32,83	ALOG 32,119 ALOG 32,118 ALOG 32,74 ALOG 32,75 ALOG 32,78 ALOG 32,89 ALOG 32,81 ALOG 32,83 ALOG 32,83

Table 2-32. TM Telemetry List

USER ID	ACROHYM	TLM PUNCTION DESCRIPTION	SCNL	MTX LOC COL, ROW	SAPL	H RI	ADDRESS RIU-CII
3-FI	TISHT	INTERMEDIATE STACE TEMP 8 (HOT)	ALOG	32,84	-	90	86-90
IM-69	TBAFFT	BAFFLE TEMP	ALOC	32,87 53	128	90 8	92-90
IM-70	TCPPACT	COLD STACE FPA TEMP	ALOG	32,89	1 2		66-90
603	TMIGUP	79 I+	ALOC	32,15	? ~		9066
*0-E	TH19VN	V61-	ALOG	32,16	۰,	90	06-67
TH-05	THBV	48A	ALOC	99,20	4	90	89-90
TM-08	THIMPS	ALL CAL LAMPS ON	ALOG	32,17	-	Š	06-102
TH-07	TH33V	+28 SHUTTER DRIVE VOLTACE	ALOC	32,18	~	90	06-70
TM-06	TM80V	+80 BEATER VOLTAGE	ALCC	32,19		ò	06-71
TH-09	THI 19VP	PAHD 1 +19V	ALOG	32,32		.70	07-120
TH-10	TM1 19VN	BAND 1 -19V	ALOG	32,33	-	07	07-121
11-11	TM2 19V P	BAND 2 +19V	ALOG	32,34		07	07-122
TH-12	TH2 19VH	BAND 2 -19V	ALOG	32,35	~	0	07-123
TH-13	TH319VP	BAND 3 +19V	ALOC	32,36	-	-20	07-124
TH-14	TH319VN	BAND 3 -19V	ALOC	32,37		.70	07-125
TH-15	TH4 19VP	BAND 4 +19V	ALOC	32,38	-	07	07-126
TM-16	TH4 19VN	BAND 4 -19V	ALOG	32,39		.00	07-127
TH-17	THS 19VP	BAND 5/7 +19V	ALOC	32,40	-	.70	07-104
TM-18	TH519VII	BAND 5/7 -19V	ALOC	32,41		S	07-105
H-19	TH619VP	BAND 6 +19V	ALOG	32,42	-	02	901-10
TM-20	TH619VN	BAND 6 -19V	ALOC	32,43	-	02	07-107
TH-21	THIS19VP	150 +19V	ALOG	32,44		6	07-108
TM-22	THIS19VN	150 -19v	ALOG	32,45		0	07-109
TH-23	TPGUV9V	CDVU +8V	ALOG	99,21	∢	6	01-10
TH-24	171 T	FWR SUPPLY 1 SNA +6.8V	ALOC	32,55		ò	06-104
Tri-25	TH127VP	PWR SUPPLY 1 SMA +27V	ALOG			90	06-105
TH-26	TM127VN	PWR SUPPLY 1 SMA -27V	ALOC	32,57	-	ප්	901-90
TH-27	TM27V	FWR SUPPLY 2 SMA +6.8V	ALOC	32,58	-	90	201-90
TH-28	TH227VP	PUR SUPPLY 2 SMA +27V	ALOC	32,59		90	901-90
TM-29	TM227VB	SUPPLY 2	ALOC	32,60	-	90	601-90
DH-30	THUX30V	•	ALOC	32,48	-	Ś	08-110
34-31	TMUXI	MULTIPLEXER INPUT CURRENT	ALOG	32,46	-	Š	06-126
14-32	TRITORN	MILTIPLEXER BIT DENSITY	ALOG	32.47	-	Š	06-120
114-33.	TMIXSVP	MULTIPLEXER +50	ALOG	32.49	-	90	06-121
74-36	THUIXIAVP	MILTIPLETE +180	AT OC	32.51	-	90	06-122
74-25	TOURTUN	MITTIDI PYPD -30	AT OC	12, 52	•	ż	06-123
35-7	TACTA CONT	MILTIDIATES -50	W. P.	32 53	. –	2	06-124
2 6	THOUSAND THE		3 5	1	٠.	3 8	
	THUXIDAN	MULTIPLEAKE -13V	ALUS:	32,24	٠.	2	671-90
DC-11	IHIADYR	BEAT I ALU ALICERENCE	ALC:	10,25	٠ .	\$ 3	711-00
26-30	TH2ADVR	BAND 2 A/D REPERENCE	ALO:	32.62	~	90	06-113

Table 2-32. TM Telemetry List

TLM PUNCTION DESCRIPTION	SCHL	MTX LOC COL, ROW	SAPL	ADDRESS N RIU-CH
BAND 3 A/D REPERENCE	A1.00	32.65	-	A11-90
BAND 4 A/D REFERENCE	ALOG	32,66	••	06-115
BAND 5 A/D REFERENCE	AL00			911-90
DAND 7 A/D REFERENCE	ALOC	32,70		06-117
SLC 1 DRIVE CURRENT	ALOC	32,08	-	07-112
DRIVE CURRENT	ALOC	32,09	-	07-113
+/- 15V	ALOG	32,10		07-114
+/- 15V	AL00	32,11		07-116
	ALOG	32,13	~	211-70
	ALOG	32.14		07-117
CALIBBATION LAMP 1 CURRENT	ALOG	32,12	, ,-4	08-12
		99	128	•
CALIBRATION LAMP 2 CURRENT	ALOG	32,31	-	08-13
,		5.4	128	co
Calibration Lamp 3 current	ALOG	32,50	, ,	08-14
		46	128	Φ,
BLACKBODY CURPENT	ALOC	32,69		07-118
Baffle heater current	ALOG	32,117		07-111
CFPA HEATER CURRENT	ALOG	32,68		06-101
COLD STACE HEATER CURRENT	ALOC	32,107	-4	. 08-15
INCHWORM 1 POSITION	ALOG	32,71	-	07-119
NOTIFICA C MACHINI	AI OC	47 77	•	07-36
INCHUORM & DOCTTION	20 20	22 72	- ،	Ca_70
	2011	7	٠.	õõ
POWER SUPPLY 1 CURIENT	ALCC	97,46	đ	80-00
	•	01.00	•	

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Table 2-33. MSS Telemetry List

USER 1D	ACRONYM	TIM PUNCTION DESCRIPTION	TYPE	KOX TOC COL, ROW	RATE	×	ADDRESS RIU-CH
KSS-01	MSSTAT01	BILEVEL WORD 706:					07-64
	MPSYSA	SYSTEM POHER A ON/OFF	1	00,96			07-65
	MPSYSD	SYSTEM POWER B ON/OFF	B2	96,00			07-66
	MPROTSHD	ROTATING SHUTTER DRIVER ON/OFF		96,00			07-67
	HPCALLP	CAL LAMP (A OR D) GH/OFF	B4	96,00			07-68
	MSCALL?	CAL LAMP A ON, B OPP/B ON, A OPP	85	96,99	-		07-69
	MSSIRMON	SHUTTER MONITOR A ON, B OFF/B ON, A OFF	B6	86,00	-		07-70
	MSSCNIDM	SCAN HONITOR A OH, B OFF/B OH, A OFF	B7	96,00	-		07-71
HSS-62	MSSTAT02	BILEVEL HORD BOI:					08-32
	HXSCHRIN	SCAN MIRROR INHIBIT/NORMAL	9	97,00			08-32
	MPSCNOON	SCAH MONITOR ON/OFF	B-1	97,00	-4		08-33
	MPMUX	MUX ON/OPP	B2	97,00	-		08-34
	MPSCHALL	SCAN MIRROR POWER LINE I OFF/ON	83	97,00			08-35
	MPSCHBL2	SCAN HIRROR POWER LINE 2 OFF/OR	9-8	97.00	-		08-36
	MPSCAR	SCAN MERROR POWER OFF/ON	9-2	97,00	-		08-37
	MSHUXCL	MUX COMPRESSED/LINEAR	9	97,00	-		08-38
	MSMSCODE	MIDSCAN CODE OFFICE	7	97	-		08-10
6-03	MS STATO3	ATTENET WOOD 800:			•		08-49 0
3	MCBOLCEL	SAME TO THE STATE OF THE SAME TO SAME TO SAME SAME SAME SAME SAME SAME SAME SAME		00	•		0 4 - 0
	Meanscur	SALD 2 CATE STORY OF		5	• -		0 4 6
66	Non Transfer	BARD 1 100 UDI 45CW ON COR	1 (2	٠,-		9
	210000	BIND 3 TON NOTHING ON ORR	7 (8 8	٠.		900
	PL DOZLY	4 6	n .	20,00	٠,		
	Mr BD3LV	HAND 3 LOW VOLTAGE ON/OFF	4	00'86	٠,		76-90
;	MPBD4LV	BAHD 4 LOW VOLTAGE ON/OFF	<u> </u>	00,88	1		08-23
MSS-04	MSSTAT04	BILEVEL WORD 803:		;	,		08-120
	MPSYSHV		9	99,66	,-d		08-120
	MPBD1HVA	_	1-0	99 . 66	~		08-121
	MPBD1HVB	~	B2	99,00	~		08-122
	MPBD2HVA	BAND 2 HIGH VOLTAGE A ON/OFF	B3	00'66	-		08-123
	MPBD2HVB	BAND 2 HICH VOLTAGE D ON/OFF	\$B	00'66			08-124
	MPBD3HVA	BARD 3 HIGH VOLTAGE A ON/OPP	88	00 ¹ 66	-		08-125
	MPBD3HVB	BAND 3 HIGH VOLTAGE B ON/OFF	B6	00,66	,		08-126
	MXSHR:30T	SHUTTER ROTATING YES/KO	B7	00'66			08-127
KSS-05	MTSCMRRG	SCAN MIRROR RECULATOR TEMP	PASS	33,06	-		08-17
MSS-06	HTSCHREL	SCAN MIRROR BLECTRONICS TRMP	PASS	33,07	••		08-18
KSS-07	MTSCARCL	SCAN KIRBOR COIL TEMP	PASS	33,00	-		61-80
MC S-08	MTSCARHG	SCAN MIRROR ROUSING TEMP	PASS	33.05	-		03-20
60~SSM	XIMIX	MIX TEMP	PASS	33,10	-		08-21
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000	(COMMON CASE STORY STORY STORY	5040				00-00
01-0	CLOWING.	PHR SUFFEI IERF (NALICHEIBR)	2000	11,00	٠.		17-00
11-602	AI ELLVA	ELECTRONICS COVER LEAF (MADIOMETER)	Fass	71,00	٠,		77-00
42.2~1.2	MIPPSI	PAINANT POJER SUPPLY I TENY	E SOL	11.66	٠,		00-00
2	Codd	PRIMARY POWER SUPPLY 2 TRUE	DASG		_		

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MUX A/D REPERENCE AVERAGE DATA DENSITY -24.5V PRIMARY POWER SUPPLY +5V RADIOMETER POWER SUPPLY BAND I CHANNEL A VIDEO BAND 3 CHANNEL A VIDEO
BAND 4 CHANNEL A VIDEO OFTICAL SHITCH LAMP 1 CURRENT MON OFTICAL SHITCH LAMP 2 CURRENT MON OFTICAL SHITCH LAMP 2 CURRENT MON CAL LAMP CURRENT SHUTTER CONTROL INTEGRATOR SCAN MIRROR REGULATOR

Table 2-33. MSS Telemetry List

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GLOBAL POSITIONING SYSTEM

Table 2-34. GPS Telemetry List

USER ID	ACRONYM	TLM PUNCTION DESCRIPTION	TR	COL, ROW	BATE	×	RIU-CH
IVER/P	RECRIVER/PROCESSOR ASSEKBLY	SEKBLY					
10-S45		CPS SERIAL DATA OUTPUT	SER	17	128		94
				9 5	128		
				; c	128		
				7 2	128		
				22	128	•	
		-		23	128	æ	
				24	128	80	
				25	128	ω	
				56	128	9	
				27	128	69	
				28	128	∞	
GPS-02	CPSTATI	BILEVEL WORD 701:					07-08
	GDATRDY	DATA READY/HOT READT	9	01	128	,	07-08
		•		7.4	128	œ	
	CCPRTLM	MODE STATUS COMPUTER/TELEMETRY	[9;	128	•	07-09
	1		•	e :	871	3 0	;
	COVRPLO	OVERBUN (O/P. BUPPER OVERPLOW YES/NO)	82	10 74	128	œ	01-10
	CCHDPASS	COMMAND PASS PLAG	B3	10	128	,	07-11
				74	128	\$	
	CCHOPAIL	COMMAND PAIL FLAG	B6	9;	128	•	07-12
				2	971	0	;
cha-ch cha-ch	GPSSTATZ	BILEVEL WORD 702:	(;	,		07-32
	GTIMERUM	TIME CODE GENERATOR RUN/SET	0 9	99,39	,		07-52
	CHPAON	R/PA POWER UN/OFF	19	99,39	-		07-33
	CHAPWRON	MAIN POWER ON/OFF	B2	99,39	-		07-34
	COSCION	OSCILLATOR 1 SELECT ON/OPF	D3	99,39	-		0.7-35
	COSC2ON	OSCILLATOR 2 SELECT ON/OPF	B6	66'66	-		07-36
	CHAVCHO	B/PA HODE WAVICATE/COMMAND	B5	99,39	-		07-37
	CRECCHD	DMA READY/HOT READY TO RECEIVE SM CMD	9-2	99,39	-		07-38
	CXMTDA	DMA READY/HOT READY TO XHIT SER DATA	1-0	99,39	-		07-39
CPS-04	CPSSTAT3	BILEVEL WORD 703:		•			07-40
	CINIT	INITIALIZATION YES/HO	9	99,40	-4		07-40
	GPROP	PROPAGATE YES/NO	B1	99,40	-		07-41
	CCOLL	COLLECT ALMANAC MODE YES/NO	B2	99,40	•		07-42
	OT MATE	TWALLS TERESTEEN WORMS OF GATOR) (C	09 00	. ,		27-20
	CINVIR	INVALID IDAGSIATON/NORME OF ENLIVE		27	٠.		
	CDIACERR	DIACHOSTIC ERROR/HUBMAL OPERATION		24,48	٠,		44-/0
	CTSTEAR	BUILT IN TEST ERROR/NORMAL OPERATION	1	99,40	-		\$ - 70
	CHORZAIL	SET PAILURE/EGREAL OPERATION	9	99,40	-4		94-70
	***	101					01-10

	ACRONYM	TLM FUNCTION DESCRIPTION	SCHL	MTX LOC COL, ROH	Shpl. Rate	×	ADDRESS RIU-CH
6	CHDEBITI CHDEBIT2	R/PA MODE BIT 1 R/PA MODE BIT 2	97	99,103			07-48 07-49
ت	CHORBITS	A/PA HODE BIT 3	B - 5	99,103	·		07-50
	GRPAOP	K/FA EGUS BIT 4 R/PA OPERATIONAL MODE		44,103	•		16-70
•		STANDBY	0000				
		SPARE	1000				
		LOAD	0010				
		PROPAGATE	1100				
		COIGHAND	0100				
		CROUND	0101				
		CAL	0110				
		RECRIVER TRST	0111				
			0001				
		SPACE (ST,P,D)	1001				
			1010				
		SPACE (ST, C/A, D)	101				
		SPACE (TITF, P, ND)	1100				
2		SPACE (TTTF, P,D)	1011				
17		SPACE (TITP, C/A, ND)	1110				
70		SPACE (TTTF,C/A,D)	1111				
		(ST=SEQUENTIAL TRACK STATE)					
		(TITE-TIME-TO-PIRST-FIX STATE)					
		(PTIMACKING P CODE)					
		(C/A-TRACKING C/A CODE)					
		(D-DAIA DEMODULATION DWELL)					
		CADENON DAILA DEMODOLATION DARLE)	•	60.	•		63-69
	CCATRITA	CATELLIS DIE I		601.00	- ۱		17-51
		SATELLITE BEING TOACED	, y - y - y		•	•	;
		NOW OR A	, 3 8				
			6				
		. ~	9				
			~				
90-845	GPSSTAT5	BILEVEL WORD 705;	ŀ				07-56
_	CRECCHA	RECEIVER CHANNEL A POWER ON/OFF	94	99,104	-4		07-56
_	GRECCHB	RECEIVER CHANNEL B POWER ON/OFF	1-0	99,104	-		07-57
	GRAMSV	RAM +5V STBY PWR BELOW 2.5V/NORMAL	B2	99,106	-		07-58
9	CCOSLKA	COSTAS LOCK CHAN A YES/NO	B-3	99,104	-		07-59
J	CCOSLKB	COSTAS LOCK CHAN B YES/NO	H	99,104			07-60
J	CCDSELA	CODER SELECT CHAN A P/CA	98	99,104			07-61
3	CCDSELB	CODER SELECT CHAH B P/CA	98	99,104			07-62

Table 2-34. GPS Telepatry List

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Table 2-34. GPS Telemetry List

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Address Riu-ch	10-90																												
×	-	•			-			-	•	-	-	-	,	~	_	4	-	-	•		-	•			~	-	•	-	
SAPL	٦-	;	-	32	32	- ;	35	35	- ;	35 1	35	3 2	; -	35	•	; ~	32	- ;	4	32	 5	; -	35		32	۲ ۾	; ~	32	~
HTX LOC COL, ROW	96,11		11,96	13,00	19,61 19,61	96,11	13,00	13,00	96,11	13,00 96,11	6, E.	13.01	97,11	13,01	12.5	97,11	13,01	11,7	97,11	19,01	97,11	10.00	13,01	98,11	13,02	58,11	98.11	13,02	98,11
SCHL	1-08		82	•	n 1	ę S	Š	•	3 6	57	Ş		S-1	9	7	83	,	7	SS		9)	8-0		<u>.</u>	82		83
TLM PURCTION DESCRIPTION	PDU SERIAL DATA: Solar array drive rate	00 14(0) 01 24(0) 10 5TOP	11 JH(U) SAD MODE ORBIT/SAFEHOLD		SAD INHIBIT LACIC ENABLED/DISABLED	SOLAR ARRAY DEPLOYED/NOT DEPLOYED	DRPLOY INHIBIT LOCIC ENABLED/DISABLED		SA/LH RETRACT ALLOW/DISALLOW	SAD RATES NOT CONTROLLING/CONTROLLING	ned to whe enduate (befering	DEFECT FOUR FORMAND/ METRACI	DEPLOY DRIVING/HOT DRIVING	מפרים ומס ייינו הפרים ומס פריוום מספנוו	offen aline selected/not selected	LOWER HINGS SELECTED/NOT SELECTED		AREAT HINGE SELECTED/HOT SELECTED	UPPER HINGE DEPLOYED/NOT DEPLOYED		LOWER RINGE DEPLOYED/NOT DEPLOYED		DIGITAL I (FIRED)	SAFEHOLD A DISABLED/ENABLED		SAFEHOLD A ACTIVATE DISABLED/ENABLED	SAPEHOLD A CONTROLLING RO / YES		SAPEHOLD A MACS SAPEHOLD SCHL TES/NO
ACRONYM	YSADRT		TLSDKOD		XSAD LKB	YSAPOS	YDPLIKH		YDPLAET	YSADCTL	9701909	alon and	YDPLSTA	1031014	7361101	YLHSEL		YSAMSE	YURP03		TLHPOS			YSHASTA		TSHAACT	YSHACL		YACSAIN
USER ID	10-na <i>a</i>									2-	-17	3																	

Table 2-35. PDU Telemetry List

USER 1D	АСВОНҮН	TLM PUNCTION DESCRIPTION	SGNL TYPB	HTK LOC COL, ROS	SAPL	z	ADDRESS RIU-CB
	*CCCAB?	CABTURN A FEE CAN BATE CAUTHOR	3-42	13,02	32	-	
	1033461	SAFERALL A VSS SAM BALLE WALLEVE	C + 6	13,02	32	~	
		00 14(0) 01 24(0) 10 5TOP					
	YSHAMOD	11 3W(O) SAPZHOLD A BARTH SNSR/INERTIAL MODE	9	98.11	-		
			, ,	13,02	35	-	
	ITDYSCA	SAFEROLU A AT LAUBK PUSITION NO/165	1	13.02	32 1	pd.	
-	YSHBSTA	SAFEHOLD B DISABLED/ENATLED	S.	99,11	-	ı	
	YSHBACT	SAPEHOLD B ACTIVATE DISABLED/ENABLED	<u></u>	13,03	32	-	
		-	1	13,03	35	-	
	YSEBCTL	SAFEHOLD B CONTROLLING NO/YES	S2	11,98	2 ~	-	
2~	YACSBIN	SAFEHOLD B MACS SAFENOLD SGML YES/HO	S-3	99,11	4 –	•	
17	400000	TOTAL B CO CAS BANKERY	9	13,03	32	-4	
4_	1 vacco1	SAFEROLD B COS SAD MAIR WHING	n 1 + 5 × 5	13,03	- 2	-	
		00 1W(0) 01 2W(0) 10 5TOP			:	•	
		11 34(0)					
	YSHBMOD	SAPEHOLD B EARTH SHSR/INERTIAL MODE	9 8	99,11	٦,	•	
	YIDXSCB	SAPREDID B AT INDEX POSITION AND THE	87	13,03	ž -	-	
_				13,03	32	-	
PDU-02	YSTAT01	BILEVEL WORD 601:					80-90
	THAPHR	TH POWER A EMABLED/DISABLED	7-7	33,85	~ •		06-10
·	YTHBPUR	IM POWER B ENABLED/DISABLED		23, 84 44, 64	 ,		- F-
	AMC DE DIO	More bound a punctual/orange	, v		۰,		1 1 20
	YSBAPHR	DASE POWER A EHABLED/DISABLED	9	33,85	4 ~4		\$1-90 \$1-90
	YSBBPUR	DASB POYER B ENABLED/DISABLED	B7	33,85			06-15
PDU-03	YSTAT02	BILEVEL WORD 602:					06-32
	YGPSPAR	GPS POWER ENABLED/DISABLED	9	33,86			06-32
	YSKAHTR	TH SMA HEATER PHR ENABLED/DISABLED	B1	33,86			06-33
	YPSBLEK	TH PSBL LINKS PUR ENABLED/DISAULED	B-2	33,86	~		05-34
	YMSHTB	MSS I/P B HEATER ENABLED/DISABLED	E-3	33,86	 1		06-35
	YXSBYHT	TH EXT STANDBY HTR ENABLED/DISABLED	4	33,86			06-36
_							

Table 2-35. PDU Telemetry List

ORIGINAL PAGE IS OF POOR QUALITY

TLA FUNCTION D2SCRIPTION	SCML	HTX LOC COL, RGH	SHPL	×	ADDRESS RIU-CH
USS HEATER 3A EMABLED/DISABLED	<u></u>	98. 1	-		06-37
USS HEATER 3B ENABLED/DISABLED	9	33,86	٦.		06-38
BINCE REALERS ON/OFF BILDVRI ENED 603:	Ì	99,66	-		09-90
PDU ELECTRONICS A/B SELECTED		78	128		06-40
PORMATTER/ADSA POWER OH/OPP	1-8	78	128		06-41
DPU FULL ON/STANDBY	D-2	78	128		06-42
SPARE RELAY 2 BUS A/BUS B	<u>-</u>	78	128		06-43
SPARE RELAY 1 OH/OFF (TICK/TOCK)	Ţ	78	128		99-90
SPARE RELAY 2 ON/OFF	B5	78	128		06-45
USS HEATER 3C BUS A/BUS B	9	78	128		96-90
USS REATER 3C BRABLED/DISABLED	2-1	78	128		06-47
BILEVEL WORD 604:					06-48
HOTOR DRIVE A (SAD/BOOM) ENAB/DISAB	9	33,88	-		06-43
HOTOR DAIVE B (SAD/BOOM) ENAB/DISAB	1-8	33,88	-		06-49
SEC SHITCH 1 CT 180/LT 180 DEGREES	B2	33,08			06-50
H 2 CT 180/LT 180 DEGREES	<u>-1</u>	33,88			06-51
PDU A RIU A ON/OFF	9	33,68	~		06-52
PDU B RIU A ON/OFF	25	33.88	-		05-53
PSV SUPPLY VOLTACE	ALOG	33,63	-		06-05
FM 18V/20V MONITOR	AI OG	33.92	-		09-90
SOLAR ARRAY POSITION NIMBER 1	AI OS	33,125	- ،		88
		83	128	_	
SOLAR ARRAY POSITION NUMBER 2	ALOC	33.126	~		20-90
		88	128	-	;
PDU LOGIC TEMPERATURE	PASS	32.90	7		06-17
		99	-		67-90
			_		61-90

Table 2-35. PDU Telemetry List

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ORIGINAL PAGE IS OF POOR QUALITY

Table 2-36
DPU
DIGITAL PROCESSING UNIT

2-176

Table 2-36. DPU Telemetry List

USER ID A	ACRONYM	TLM PUNCTION DESCRIPTION	SCNL	MTX LOC COL, ROW	SAPL RATE	¥.	ADDRESS RIU-CH
DPU-01		TIME CODE DATA: (BCD EXCEPT TIME SOURCE)					
•		TIME SOURCE (1110-LSD, 1101-NOT LSD)	SO-3	32,00	-		00-90
	TCDAYH	DAYS HUNDREDS	24-7	32,00	-		
	DTCDAYT	DAYS TENS	80-3	32,01			
	DTCDAYU	DAYS UNITS	24-7	32,01	-		
	DTCHRT	HOURS TENS	S0-3	32.02	-		
	DTCHRU	HOURS UNITS	24-7	32,02	-		
	DICHINI	MINUTES TENS	S0-3	32,03	-4		
_	DTCHINU	MINUTES UNITS	S4-7	32,03	-		
_	DICSECT	SECONDS TENS	SO-3	32.06	-		
_	DTCSECU	SECONDS UNITE	2-95	32.04	•		
	DTCMSECH	MILLISECONDS HINDREDS	£-08	32.05			
	DICKSECT	MILISPECIAL TRUS	Z-42	37,05	•		
	DTCMS#CII	MILITARCOLD INTRA	6100	90,00	• -		
	TCHSECF	MILLISECOND PRACTIONS (LSB-1/16 MS)	54-7	32.06	• ••		
DPU-02		DPU STATUS:		•			
	DRIUSEL	RIU A/B SELECTED	S0	32.07	-		
	DMSSTCR	MSS TIME CODE REGUEST YES/NO	J.	32.07	-		
	DIPITOR	TH TIME CODE REGIEST YZS/NO	. (s	32.07			
.7:	DCDHTMT	C/DH-TH DATA TRABSPER YES/NO	S	32.07	. ~		
	DI-Diete	DESTRUCTION TIME CONE VESTION	4-6	30 02			
	OTCROUP	TIME CODE REGISTER UPDATE YES/NO	S5	32.07	۰.		
		NOT ISED	¥	12.07	-		
	Delical	DI A/a got gotten	, ,	20,00	٠.		
60.194	O COLUMN	over a selected		32,07	٠.		76.00
-	rotent	present the cot-		37,10	•		67-00
		פורכיני בייי ביייי פוליי	,		•		9 .
	DARIUA	DPU A RIU A ON/OPP	9	33,88	-		06-54
	DBRIUA	DPU B RIU A ON/OFF	1	33,68	-4		06-55
		-					
		-					

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DASB (S-B)
DIRECT ACCESS S-BAND TRANSMITTERS

Table 2-37

ORIGINAL PAGE IS OF POOR QUALITY

M RIU-CH	07-72 07-72 07-73 07-76 07-96 07-90 07-101 07-98 07-19 07-19	•	
RATE			
COL, ROS	33,76 33,77 33,77 33,77 33,77 33,78 33,78 33,78		
TYPE	M-0 M-1 M-4 M-6 M-4 M-6 M-6 M-6 M-6 M-6 M-6 M-6 M-6 M-6 M-6		
TLM FUNCTION DESCRIPTION	BILEVEL WORD 707: KHTR A POJER ON/OPP KHTR B POWER ON/OPP S-B ANTENNA SELECT WITEA/XHTR B KHTR B POWER SUPPLY MONITOR KHTR B POWER SUPPLY MONITOR KHTR B PORWARD RP POMER KHTR B PORWARD RP POMER KHTR B REPLECTED RP POWER XHTR A POWER AMP TEMP KHTR D POWER AMP TEMP		-
ACRONYM	SBSTATO1 SXMTRAON SANTAORB SAPHRSUP SBPHTSUP SAFWOPER SIRVOPER SARREPWR SARREPWR SARREPWR SARREPWR SARAT		
USER ID	DASB-01 DASB-02 DASB-02 DASB-03 DASB-07 DASB-08 DASB-09 DASB-09 DASB-09	2-179	

Table 2-37. DASB Telemetry List

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> Table 2-38 THERMAL SUBSYSTEM

2-180

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ORIGINAL PAGE IS OF POUR QUALITY

ADDRESS RIU-CH	06-20	06-21	J6-22	26-23	06-24	06-25	06-26	06-28	06-29	06-30	06-31	06-27	08-26	08-27	08-28	08-29	08-30	08-31	07-20	04-84	07-23	67-22	07-31	08-100	08-85	08-86	08-87	08-93	08-94	28-95	97-/0	06-80	07-30	67-70	16-80	08-92	07-24	07-25	07-26	07-27
x																																								
SMPL	-		-	-	-	_	,	~ 4	-		-	-	-		-	~	,-4	,	 ,	→ -		•		-	-	-	-	 ,	, ,	m (٠.	٠.	 .	-4	-	~	_	-	-	_
MTX 1.00 COL, 804	32,63	32,67	32,120	32,121	32,122	32,123	32,124	32,125	33,93	33,94	33,95	33,96	33,97	33,98	33,99	33,100	33, 161	33,102	33,103	33,122	33,104	33,106	33,124	32,126	33,107	33,108	33,109	33,110	33,111	33,112	22,113	93,16	33,115	33,123	33,116	33,117	33,118	33,119	33,120	33,121
SCNL TYPE	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	rass second	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	200	FASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
TLM PUNCTION DESCRIPTION	TH ATTACH FITTING NUMBER 1 TEMP	TH ATTACH PITTING NUMBER 2	TM ATTACH PITTING NUMBER 3	•	APEX PITTING NUMBER 1 TEMP	_	APEX PITTING NUMBER 3 TEMP		_	_	RIU O6 HOUNTING PAHEL (OUTBOARD) TEMP	_	EQUIPMENT MTG PANEL NUMBER 1 TEMP	EQUIPMENT ATC PANEL NUMBER 2 TEMP	EQUIPMENT MTG PANEL NUMBER 3 TEMP (EQUIPMENT MTG PANEL NUMBER 4 TEMP	EQUIPMENT MTG PANEL NUMBER 5 TEMP (_			CLOSING WERE UR MODILE NITHER 1 TEMP	_				_	_	_ ,	_	_	+ KEEL SIRUCIUKE IERF	•	BOOM LATCHDOWN PITTING TEMP NO 1		_			ARRAY TEMP NUMBER 2	ARRAY TEMP	Array Temp Number 4
ACRONYM	QTTMAP1	QTTMAP2	QTTMAP3	QTTN:AF4	QTAPXF1	QTAPXF2	CTAPXF3	QTPDUIB	QTPDUOB	QTRIU61	QTRIU63	QTRFCPO	QTEQPP1	QTEQPP2	(TEQPP3	QTEQP24	QTEQPP5	OTEQPP6	QTSBXP1	QISBXP2	OTC WANT	OTCHWB2	OTSADPL	QTBJPYO	QTHSSHT	QTMS SW1	OTHS SW2	QTUBPUH	WILBPWHI	QTGPSAP	QTPOSTK OTHER	VINECTA	QTBLP1	QTBLFZ	QTLB PWHO	QTUBIP	QTARRY1	QTARRY2	QTARRY3	QTARRY4
USER ID	10-11	TH-02	TF-03	TH-04	TII-05	TH-05	TH-07	TH-08	LH-09	TH-10	TH-11	TH-12	TH-13	TH-14	TH-15	TH-16	TH-17	TH-18	TH-19	07-H7	TII-23	TH-24	TH-22	TH-37	TII-25	TH-26	TH-27	TH-29	TH-31	TH-32	16-33	٠ <u>٠</u>	TH-35	TH-36	IH-28	TH-30	TH-38	TH-39	LH-40	TH-41

Table 2-38. Therasl Telemetry List

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ON BOARD COMPUTER

OBC

2-182

Table 2-39. OSC Telemetry List

5	50-10																																	
*	•																																	
KATE	1 28	128	22	1.26	128	3 ;	128	128	128	128	128	128	1 20	82.1	961	128	178	128	128	128	128	128	128	128	128	1.28	821			ery row.				
OOL, ROW	35,0	16	35	23	10		S	<u>ප</u>	109	110	111	112		911	.	911	117	3.8	119	120	121	122	123	124	125	126	127			ppeare in av				
71.12	20-1	SER	e S S	S	84.0	1	X	222	SER	878	4	50.00	5	6 6		200	0 D	1 E A	828	a.		STZ	25	SCR	223	82.5	8.78 1.00			he date a				
ACROSTIN TLM FUNCTION DESCRIPTION	5	NATA	Z Z	OBC DATA WULD 3	DATA WORN A		4	ZY Z	OBC DATA WORD 7	OBC DATA NORD 8	DATA	DATA	DATA UNION	DATA MORD	DATA COSO	DATA WORD	DATA MORD	DATA WORD	DATA MORD	DATA MEDED	DATA MORD	DATA WORD	DATA WORD	OBC DATA WORD 22	DATA MORD	DATA WORD	DATA MORD	See Section 2.5 for an explanation of OBC telemetry reports.	See following pages for definition of the ONC data words.	 "Column" is shown here without reference to "row" because the data appears in every row. 		_		
USER 10	10-220	20- 200																2-										See Section	See follow	- Column				

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Table 2-39. OBC Telemetry List (Continued)

MI HOR OF PRANCE OF DO 35 DO 35 DO 35 DO 36 DO 36 DO 36 DO 37 DO 39 DO 30 DO 3	1D 08C-02 (DAT 08C-01 HREMORIC 18 SDF 01 SDF	Coata	REPORT KAME SOLAR ARRAY POSITION REPORT SOLAR ARRAY POSITION REPORT SOLAR ARRAY DEPLOY REPORT STORED COO PROCESSOR REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT #1 ATTITUDE CONTROL REPORT #4 ATTITUDE CONTROL REPORT #4 ATTITUDE CONTROL REPORT #5 ATTITUDE CONTROL REPORT #7	RATE:	8 8	1D 08C-01 47 47 48 48 48 49 49 26 27 27 27 27 27 27 27 27 27 27 27 27 27	08C-02 (DAT METRONIC TRON 01 TRON 02 UPL 03 UPL 04 ACS 01 ACS 01 ACS 03 ACS 04 ACS 05 ACS 06	THEOLOGA 25) THOUSTOR REPORT THOUSTOR REPORT ILTER REPORT # ILTER REPORT # CONTROL REPORT	RATE HANNER AND
22		_	POSITION REPORTED DEPLOY REPORTED TRUCK REPORTED TRUCK REPORTED TRUCK REPORTED REPOR		(005-01 26-01 27-27 27-01 28-27 27-01 27-01 27-01	METERONIC TROM 01 TROM 02 TROM 03 UPL 04 ACS 13 F.ZECAPT1 ACS 01 ACS 02 ACS 03 ACS 04 ACS 05 ACS 05 ACS 06	PORT PORT PORT PORT PORT PORT PORT PORT	
-		_	SOLAR ARRAY POSITIOM REPORT SCOLED COD PROCESSOR REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT #3 ATTITUDE CONTROL REPORT #3 ATTITUDE CONTROL REPORT #3 ATTITUDE CONTROL REPORT #5 ATTITUDE CONTROL REPORT #5 ATTITUDE CONTROL REPORT #5 ATTITUDE CONTROL REPORT #6 ATTITUDE CONTROL REPORT #7	<i>***</i>	2004 50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	226987 33 726987 765422 38	TYON 01 TYON 02 TYON 03 UPL 03 UPL 04 ACS 13 ACS 01 ACS 01 ACS 04 ACS 05 ACS 06 ACS 06	T MOMITOR REPORT T MOMITOR REPORT T MOMITOR REPORT ILLER REPORT ILLER REPORT CONTROL REPORT	мммм фффффффф
		_	SOLAR ARRAY POSITIOM REPORT SOLAR ARRAY DEPLOY REPORT STORED CAD PROCESSOR REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT PL		**************************************	225454 333 225987 765421	TYON 01 TYON 03 TYON 03 UPL 04 UPL 04 ACS 13 FZECAPT1 ACS 01 ACS 01 ACS 03 ACS 04 ACS 05 ACS 05 ACS 05	T MONITOR REPORT T MOSITOR REPORT T MOSITOR REPORT T MOSITOR REPORT T MOSITOR REPORT COSTROL REPORT	
		_	SOLAR ARRAT DEPLOY REPORT STORED COD PROCESSOR REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT #1 ATTITUDE CONTROL REPORT #2 ATTITUDE CONTROL REPORT #3 ATTITUDE CONTROL REPORT #4 ATTITUDE CONTROL REPORT #5 ATTITUDE CONTROL REPORT #5 ATTITUDE CONTROL REPORT #6 ATTITUDE CONTROL REPORT #7 ATTITUDE CONTROL REPORT #6 ATTITUDE CONTROL REPORT #7		**************************************	7 6 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	TYDH 02 TYDN 03 UPL 03 UPL 04 ACS 13 FZZCAPT1 ACS 01 ACS 01 ACS 04 ACS 05 ACS 05 ACS 06 ACS 06	T MOSITOR REPORT I KENITOR REPORT ILTER REPORT 14 COSTROL REPORT	
		_	STORED CAD PROCESSOR REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT ATTITUDE CONTROL REPORT #2 ATTITUDE CONTROL REPORT #3 ATTITUDE CONTROL REPORT #3 ATTITUDE CONTROL REPORT #5 ATTITUDE CONTROL REPORT #6 ATTITUDE CONTROL REPORT #7 ATTITUDE CONTROL REPORT #7 ATTITUDE CONTROL REPORT #7 ATTITUDE CONTROL REPORT #7		4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7 6 5 4 2 2 2 5 6 9 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	TPON 03 UFL 03 UFL 04 UFL 04 ACS 13 FZECAPTI ACS 01 ACS 02 ACS 04 ACS 05 ACS 05 ACS 05 ACS 05	I FORITOR REPORT ILTER REPORT #4 COSTROL REPORT	
				*****	4.52 ± 6.0 ±	7	UPL 03 UPL 04 UPL 04 ACS 13 PZZCAPT1 ACS 01 ACS 01 ACS 04 ACS 05 ACS 05 ACS 06	ILTER REPORT #3 ILTER REPORT #4 CONTROL REPORT	
		_		*****	44. 44. 44. 44. 44. 44. 44. 44. 44. 44.	7 88 17 18 27	UFL 04 ACS 13 ACS 01 ACS 01 ACS 01 ACS 02 ACS 04 ACS 05 ACS 06	LLTER REPORT #4 COSTROL REPORT	-
		_		*****	. # # # # # # # # # # # # # # # # # # #	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ACS 13 ACS 01 ACS 01 ACS 02 ACS 03 ACS 03 ACS 05 ACS 06 ACS 06	COSTROL REPORT CONTROL REPORT COSTROL REPORT COSTROL REPORT COSTROL REPORT COSTROL REPORT COSTROL REPORT	444444 444
		_		• • • • • • • • • •	2804404;	20 - 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	ACS 01 ACS 01 ACS 02 ACS 03 ACS 04 ACS 05 ACS 05	COSTROL REPORT	• • • • • • • • •
		_	REPORT REPORT REPORT REPORT REPORT REPORT	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	8 9 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	8-24446 8-2444	AZECR71 ACS 01 ACS 02 ACS 03 ACS 04 ACS 05	ACCUTIVE REPORT CONTROL REPORT CONTROL REPORT CONTROL REPORT CONTROL REPORT CONTROL REPORT	•••••
8 6 0	8		REPORT REPORT REPORT REPORT REPORT REPORT	****	95753:			COSTROL REPORT COSTROL REPORT COSTROL REPORT COSTROL REPORT COSTROL REPORT COSTROL REPORT	
6.0	0		CONTROL REPORT CONTROL REPORT CONTROL REPORT CONTROL REPORT CONTROL REPORT	* * * * * * * *	3304:	~~~~		CONTROL REPORT CONTROL REPORT CONTROL REPORT CONTROL REPORT	44444
0	0		CONTROL REPORT COSTROL REPORT COSTROL REPORT COSTROL REPORT COSTROL REPORT	~~~	203:	m 4 N 0 N		COSTEOL REPORT COSTROL REPORT COSTEOL REPORT	~~~
	A		CONTROL REPORT CONTROL REPORT CONTROL REPORT CONTROL REPORT	***	04:	***		COSTROL REPORT COSTROL REPORT COSTROL REPORT	4444
·	A A A A A A A A A A A A A A A A A A A		CONTROL REPORT CONTROL REPORT CONTROL REPORT	444	; ;	n o r		COSTROL REPORT	4 4 4 1
12	A CS A CS B THE		CONTROL REPORT CONTROL REPORT	440	•	٥ ٨		COSTROL BEPOST	4 4 (
=	ACS ACS BYB BYB BYB BYB BYB BYB BYB BYB BYB BY		CONTROL REPORT	∢ €	ç	7			4 (
*	AC3 EPH EPH		REPORT	e	94		ACS 07	ATTITUDE COUTTOL REPORT #7	•
<u></u>	H62		-	٥	4.7	12		ATTITUDE COUTEOL REPORT \$12	Ð
	EPH		CLUCKEN SECONI VI	•	48	13		PRESERTS REPORT #1	•
1			PRESENT APPORT #2	•	63	71	крн 02	EPHEMERIS REPORT #2	•
18 15	2. 2.			•	S	12			4
	ANT		TOAS AST POINTING REPORT #1	•	215	20		TORS ANT POLETING RELYRT #1	•
	ANT		TORS ANT POINTING REPORT #2	•	25	21		TESS ANT POINTING REPORT #2	•
ķ1 22	ANT		POINTING	•	53	77		POINTING REPORT	•
	ANT		APT POINTIEG	•	3	23		POINTIES BEPORT	-
	V		CONTROL RPPORT	-	: :	28			~
16		•		• •	13	2 4		THE AND PRINCE REPORT AC	•
200	5			•	8 S	•		tota ani rotatina meroni va	•
	ACS		ATTITUDE CONTROL REPORT #9	-	8	16	2PB 04	EPHERERIS REPORT #4	
	ACS		ATTITUDE COUTROL REPORT 810	-	28	11	EPH 05	CPHESTERIS REPORT 05	_
	UPL			_	9	18		EPHERERIS REPORT #6	-
	UPL		UPDATE FILTER REPORT 02	_	. 59	6 ₹		RZPORT	
	SA		ATTITUDE CONTROL REPORT #11	•	62	7 7	ACS 11		•
b1 12	2 ACS 12		ATTITUDE CONTROL REPORT #12	6 0	63	12		COUTTROL	•
			-						
^									

Table 2-39. OBC Telemetry List (Continued)

PRAME	1D 08C-01	OBC-02 (DATA	FA WORDS 1 THROUGH 25) REPORT NAME	SHPL	MINOR PRAME	10-280	OBC-02 (DATA WORDS HNEXONIC REPORT	ra words 1 through 25) report nake	SMPL
99	43	SEP 01	Solar epherents aeport	4.	96	34		UPDATE FILTER REPORT #11	
n •c	6 4 14	MOKON 01	MEMORY MONITOR REPORT #1) G	`	CHT 01	CAT UPDATE REPORT	-
. ~	45	EO HOU		-	6				
σ	53	UFL 06	FILTER REPORT	-	8				
ø.					101				
0	38	ACS 13		•	102	38	ACS 13		4
~	39	EXECRPTI	REPORT	•	103	39		RE PORT	~
~		ACS 01	REPORT	-9	8			CONTROL REPORT	4
~	7	ACS 02	ATTITUDE CONTROL REPORT #2	•	105	7	ACS 02	ATTITUDE CONTROL REPORT #2	4
4	m	ACS 03	ATTITUDE CONTROL REPORT #3	*	106	-	ACS 03	ATTITUDE CONTROL REPORT #3	4
s	4	ACS 04	ATTITUDE CONTROL REPORT #4	4	101	•	ACS 04	ATTITUDE CONTROL REPORT #4	•
9	'n	ACS 05	ATTITUDE CONTROL REPORT #5	∢	108	~	ACS 05	ATTITUDE CONTROL REPORT #5	•
7	9	ACS 06	ATTITUDE CONTROL REPORT \$6	4	109	9		CONTROL REPORT	4
80	7	ACS 07	ATTITUDE CONTROL REPORT \$7	4	110	~		CONTROL REPORT	•
6	12	ACS 12	ATTITUDE CONTROL REPORT #12	œ	111	12		CONTROL	00
_	13	EPH 01		•	112	2		S REPORT 61	•
_	14	EPH 02	EPHEMERIS REPORT #2	•	113	14			*
~	15	EPH 03	EPHEMERIS REPORT #3	4	154	15	EPH 03	DEPORT	4
~	20	ANT OI	TDRS ANT POINTING REPORT #1	•	115	20	ANT 01	TDRS ANT POINTING BEPORT #1	4
-	21	ANT 02	TDRS ANT POINTING REPORT #2	•	116	21	ANT 02	TDAS ANT POINTING REPORT #2	•
<u>~</u>	22	ANT 03	TDRS ANT POINTING REPORT #3	•	117	22	ANT 03	POINTING REPORT	4
•	23	ANT 04	TDRS ANT POINTING REPORT #4	•	118	23	AMT 04	TDES ANT POINTING BEPORT #4	4
~ <	:			•	611	;			
	.	ANT US	IDAS ANI POINTING REPORT PS	•	120	9	ART 05	TERS ANT POINTING BEPORT #5	•
	30		UPDATE FILTER REPORT #7	-	122				
_	31	UPL 08	UPDATE PILTER REPORT #8		123				
~	32		UPDATE FILTER REPORT #9		126				
~	33		UPDATE PILTER REPORT #10	_	125				
4	11		ATTITUDE CONTROL REPORT #11	4	971	11	ACS 11	ATTITUDE CONTROL SEPORT #11	4
S	12	ACS 12	ATTITUDE CONTROL REPORT #12	•	127	7.		CONTROL REPORT	•
			-						
			•						

OF POOR QUALITY

MISCELLAREGUS FURCTIONS

Table 2-40. Miscellaneous Punctions Telemetry List

ORIGINAL PAGE IS OF POOR QUALITY

Table 2-4.
BIU 06, 07, 08
SPARE
TELEMETRY CHARRELS

The state of the s

ORIGINAL PAGE IS OF POOR QUALITY

USER ID	TLM PUNCTION DESCRIPTION	SCNL TYPE	MTX LOC COL,ROW	SMPL	H	ADDRESS RIU-CH
	SPARE POU OR DPU	SER				06-02
	SPARE PDU OR DPU	Nas :				06-03
	SPARE PDU OR DPU	SER				90-90
	UNASSIGNED	PASS				06-19
	UNASSIGNED	ANY				06-56
	UNASSICNED	ANY ANY				85-90
	UNASSICHED	ANY				659
	UNASSIGNED	ANY				06-60
	UMASSIGNED	ANT				06-62
	UNASSIGNED	ANY				06-63
	SPARE TH	*DOTY				27-90
2-		ALOCA				06-78
18		PASS				78-90
9	SPARE IN	FASS ALOC*				06-103
-		*507V				06-111
		ALCC				811-90
		ALOC*				06-119
,		ALOG*	;			06-127
CPS-04	SPARE GPS	78	99,40	~ -		07-47
CPS-03		0 6	99,103	٠.		07-55
8 8 8	SPARE GPS	1 1 1 1	99,104	• •		07-63
DASB-01	UNASSIGNED	BS	33,76	-		07-77
		ALOG*				07-102
		ALOC*				07-103
	SPANCE HIS SINGLE HIS	ALOG*				08-59
		ALOC*				09-80
		ALOC*				19-80
		ALOC*				08~62
	SPARE MSS	ALOG*				08-63
	UMASSICHED	ANY				08-64
	UNASSICNED	ANY				08-65
	UNASSIGNED	ANA				08-66
	UNASSICACIO	THE THE				08-68
_	201010000)

Table 2-41. Spare Telesatry Channels

OF POOR QUALITY

ADDRESS RIU-CH 08-69 08-71 08-71 08-73 08-74 08-75 08-76 08-76 08-78 08-78 08-78 08-78 08-100 08-101 08-102 08-103 × SMPL NTX LOC COL, ROW SCNL UNASSIGHED
UNASSIGNED
SPARE MSS
SPARE MSS
SPARE MSS
SPARE MSS
SPARE MSS
SPARE MSS TLM FUNCTION DESCRIPTION 2 USER 2-190.

Table 2-41. Spare Telemetry Channels

2.5 OBC REPORTS

The Landsat-D telemetry is structured to allow the flight software to contribute a telemetry report in each minor frame. The Landsat D flight software will contribute lil reports to each major frame of telemetry. This leaves 17 reports as a reserve for growth in the number of items contributed to telemetry by the OBC. Each report is 26 words long. The first word is output in column 35 of the telemetry matrix and gives the report number. The remaining words (words 0-24) are output in column 91-95 and 108-127. Table 2-42 provides minor frame number, report number (which will appear in column 35) and a functional identification of all of the OBC-TLM reports.

2.5.1 OBC TELEMETRY REPORT DESCRIPTION

Tables 2-43 to 2-66 show and define in detail the location and meaning or value of all the telemetered parameters. Following each group of GBC TLM Reports is that part of the flight software data dictionary defining those parameters. These tables are extracted from the Landsat-D Flight Software Design Document SVS-10130 and should be referred to for updates. The information provided is:

1. NAME: Symbolic Name of Parameter

2. DPROC: Defining Processor

3. TYPE: C = Constant, V = Variable, P = Parameter

4. UPROC/DUNITS: Processors using parameter/Display Units

5. TABLE: OBC-TLM Report Number
Drop Leading 8 for Number

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6. ENTRY: Word number in report where parameter starts

7. LENGTH: Precision in OBC Computation

S = Single PrecisionD = Double PrecisionT = Triple Precision

W = Word (8bit Flag/Counter)

8. SCALE: Scale of Parameter

9. UNITS: Units of OBC Computation

10. VALUE: Nominal Value of Parameter

11. DEFINITION: Explanation of parameter along with flag states

if Flag

NOTE: The symbolic name of the parameter is preceded by the letter "0" in the Ground Segment Data Base.

Glossary of Units

Name	Description
(R/S)2	(Radians/Seconds) ** 2
0/1	Binary Zero or Binary One
1/MS	1/Milliseconds
l/R#GA	l/(Radians * Gause)
1/Rad	1/Radians
1/V*RD	1/(Volts * Radians)
1/VLT	1/Volts
CIR	Circles
CIR/CT	Circles/Count
CNT*-1	1/Count
CNT/RA	Counts/Radians
Counts	Counts
Cycles	Cycles
DE/CNT	Degrees/Count
DEC/FS	Degrees/Fullscale
Degree	Degree
GA/CNT	Gauss/Count
GAU*-1	1/Gauss
Gauss	Gauss
Gyrcts	Gyrocounts
KGM**1	Kilograms
KGM**2	Kilograms ** 2
KM/SEC	Kilome:ers/Second
M/MSEC	Meters/Milliseconi
Meters	Meters
MG/CNT	Milligauss/Count
MSEC	Milliseconds
MTR**2	Meters ** 2
N.A.	Not Applicable
N.D.	Non Pimensioned
NMS*-1	1/(Newtons * Meters * Seconds)
NMS/CT	(Newtons * Meters * Seconds)/Counts
NHSEC	Newtons * Meters * Seconds
R*2/SE	(Radians ** 2)/Seconds
R/G*-2	Radians/(Gauss ** -2)
R/G*2	Radians/(Gauss ** 2)
R/S**2	Radians/(Seconds ** 2)
R/S/R	Radians/(Seconds/Radian)
R/V*-2	Radians/Radian
RAD**2	Radians ** 2
RAD*-1	1/Radians
RAD*−2	Radians ** -2
RAD*SE	Radians * Seconds

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RAD/CT Radians/Count RAD/GA Radians/Gauss RAD/MS Radians/Millisecond PAD/SE Radians/Second PAD/V Radians/Volt RAD/V2 Radians/(Volt ** 2) Radian Radian REV Revolutions REV/MS Revolutions/Millisecond (Radians/Second) ** 2 RSEC*2 second Second US/M Microseconds/Meter VLT*-1 1/Volts VLT*-2 Volts ** -2 Volts Volts Yes/No Binary 0 or Binary 1

. Personal resources

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Knowing the scale and the number of bits telemetered the maximum range and least significant bit weight can be obtained by using the following equations:

As an example THETAX, the first two words of ACS Telemetry Report #1 nas a scale of -5 and 2 bytes (16 bits) are present in telemetry. This provides S = -5 and N = 15 (2 bytes x 8 bits/byte - 1). Applying these to the equations above provides LSB weight of 9.54E-7 radians and a maximum range of +0.03125 radians. The format would be:

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	MSB 2	LSB 2		SCALE -5
THETAX	sżxxxxxx	xxxxxxxx		S = Sign Bit
ACS TLM RĒP #1	WORD1	WORD 2		X = Data Bit
LSB	s00000000	0000001	-	9.54 E-7 Rad
MAX RANGE	S11111111	1111111	-	.03125 Rad

MS BYTE/MSB

Used in this section to mean Most Significant Byte. Parameters are calculated as single precision (18 bit), in double precision (36 bit) or triple precision (54 bit) words in the OBC. Telemetry words are one byte (8 bits) each, therefore, only the 1/2/3 Most Significant (MS) Byte(s) of the parameter may be inserted in telemetry.

LS BYTE/LSB

Used to mean Least Significant Byte. Unless otherwise noted the LS Byte is used as telemetry word.

Software Version

These OBC Telemetry Reports reflect version 19 (5/18/82) of the Landsat-D Flight Segment Software.

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2.5.1.1 OBC Telemetry Zero Reports

Upon ground command OBC Telemetry reports may be reset to sero. An executive request code 13 command will zero the report designated in the operand. If the operand is 256 or greater the entire OBC contribution to telemetry will be set to sero.

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Table 2-42. OBC-TLM Report Sequence

Report # (Word 35)	Minor Frame Number	Mnemonic	Name
1	8, 40, 72, 1	04 ACS 01	Attitude Control Report #1
2	9, 41, 73, 1		Attitude Control Report #2
3	10, 42, 74, 1		Attitude Control Report #3
4	11, 43, 75, 1		Attitude Control Report #4
5	12, 44, 76, 1		Attitude Control Report #5
6	13, 45, 77, 1		Attitude Control Report #6
7	14, 46, 78, 1		Attitude Control Report 07
8	23	ACS 08	Attitude Control Report #8
9	26	ACS 09	Attitude Control Report #9
10	27	ACS 10	Attitude Control Report #10
ii	30, 62, 94, 1		Attitude Control Report #11
12	15, 31, 47, 6		•
	79, 95, 111,		Attitude Control Report #12
13	16, 48, 80, 1		Ephemeris Report #1
14	17, 49, 81, 1		Ephemeris Report #2
15	18, 50, 82, 1	.1.4 EPH 03	Ephemeris Report #3
16	58	EPH 04	Ephameric Report #4
17	59 .	EPH 05	Ephemeris Report 05
18	60	EPH 06	Ephemeris Roport 06
19	61	EPH 07	Ephemeris Report #7
20	19, 51, 83, 1		TDRS Ant Pointing Report #1
21	20, 52, 84, 1		TDRS Ant Pointing Report #2
22	21, 53, 85, 1		TDRS Ant Pointing Report #3
23	22, 54, 86, 1	18 ANT 04	TDRS Ant Pointing Report #4
24	28	UFL 01	Update Filter Report #1
25	29	UFL 02	Update Filter Penort #2
26	35	UFL 03	Update Filter Report #3
27	36	UFL 04	Update Filter Report #4
28	55	UFL 05	Update Filter Report #5
29	68	UFL 06	Update Filter Report #6
30	90	UFL 07	Update Filter Report #7
31	91	UFL 08	Update Filter Report #8
32	92	UFL 09	Update Filter Report #9
33 34	93 96	UFL 10 UFL 11	Update Filter Report #10 Update Filter Report #11

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Table 2-42. OBC-TLM Report Sequence

eport # Word 35)	Minor Frame Number	Mnemonic	Name
35	ÔÔ	POT 01	SA Potentiomater Data Report #1
36	01	SDP 01	Solar Array Deploy Report
37	97	GMT 01	GMT Update Raport
38	06, 38, 70, 102	ACS 13	Attitude Control Report #13
39	07, 39, 71, 103	EXECRPT 1	Flight Executive Report
40	65	MMON 01	Memory Monitor Report #1
41 42	66 67	mmon 02 mmon 03	Memory Monitor Report #2 Memory Monitor Report #3
43	64	SEP 01	Solar Ephermeris Report #1
44	24, 56, 88, 120	ANT 05	TDRS Ant Pointing Report #5
45	2	SCPRPRT	Stored Cmd Pointer Report
46	124	STBF 01	Status Buffer Report #1
47	32	TMO 01	Telemetry Monitor Report #1
48 49	33 34	TMO 02 TMO 03	Telemetry Monitor Report #2 Telemetry Monitor Report #3
50	125	STBP 02	Status Buffer Report #2
		-	

TABLE 2-43

ACS OBC TELEMETRY REPORTS

ACS TELEMETRY REPORT #1

Minor Frame Number: 8,40,72,104

OBC Telemetry Report Number: #1

Minor Frame word

ENTRY

Data

91	92	93	94	95
0	1	2	3	4
	TAX		TAY	THETAZ
2 MS E	SYTES*	2 MS	BYTES	MS BYTES

108	109	110	111	112
Ś	6	7	8	9
	4	NGX 3 MS BYTES		•

113	114	115	116	117
10	11	12	13	14
	GY		NGZ	
3 MS I	BYTES		3 MS BYTES	

118	119	120	121	122	
15	16	17	18	18 19	
	NGXF		NGYF		
	3 MS BYTES		3 MS B	YTES	

123	124	125	126	127
20	21	22	23	24
	NGZF 3 MS BYTES			NACS

^{* 2} MOST SIGNIFICANT BYTES - CALCULATED IN-OBC AS DOUBLE PRECISION (36 BIT) WORD - ONLY 2 MS BYTES TELEMETERED

ACS TELEMETRY REPORT #2

Minor Frame Number: 9,41,73,105

OBC Telemetry Report Number: 2

Minor Frame word

ENTRY

Data

۱	91	92	93	94	95
	0	1	2	3	4
	WGX MSB	WGY MSB	WGZ MSB	WX MSB	WY MSB

108	109	110	111	112
5	6	7	8	9
WZ	_	EX		EY
MSB	2 MS	BYTES	2 MS	BYTES

113	114	115	116	117
10	11	12	13	14
E	EZ .		EPA 1	
2 MS BYTES			3 MS BYTES	

118	119	120	121	122
15	16	17	18	19
	EPA 2 3 MS BYTES	EPA 3 MS B	\ 3 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
		3 M 3 B	1153	

123	124	125	126	127
20	21	22	23	24
	NHT			

Epoch for EPA1,2,3,4 is TF

ACS TELEMETRY REPORT #3

Minor Frame Number: 10,42,74,106 OBC Telemetry Report Number: 3

Minor	Frame	Mord
	ENTRY	

į	91	92	93	94	95
	0	1	2	3	4
	EPD1		EPI	D2	EPD 3 2 MS BYTES
	2 MS BYTES		2 MS	BYTES	2 MS BYTES

108	109	110	111	112
5	6	7	8	9
	EP	EPD4		C1
	2 MS BYTES		3 MS 8	TES

113	114	115	116	117
10	11	12	13	14
	EPC2			
		3 MS BYTES		

	12	121	120	119	118
	19	18	17	16	15
		EPC4		EPC3	
		3 MS BYTES		3 MS BYTES	
-		3 MS BYTES			

123	124	. 125 _	126	127
20	21	22	23	24 -
2 MS (X BYTES	⇒ EI 2 MS I	Y BYTES	IACCMD

ACS TELEMETRY REPORT #4

Minor Frame Number: 11,43,73,105 OBC Telemetry Report Number: 4

Minor	Frame ENT	word
	ENT	RY

Data

4	91	92	93	94	95
	0	1	2	3	4
	EIZ 2 MS BYTES			DIX BYTES	EDIY 2 MS BYTES

108	109	110	111	112
5	6	7	8	9
	EDIZ 2 MS BYTES		2 MS E	YX BYTES

113	114	115	116	117
10	11	12	13	14
	TWY 2 MS BYTES		YZ BYTES	WEX MSB

	18	119	120	121	122
	15	16	17	18	19
3	VEY USB	WEZ MSB	TTX MSB	TTY MSB	TTZ MSB

123	124	125	126	127
20	21	22	23	2.4
	BIAS Y		S Z BYTES	SKEW LSB

MSB = MOST SIGNIFICANT BYTE

ACS TELEMETRY REPORT #5

Minor Frame Number: 12,44,76,108

OBC Telemetry Report Number: 5

Minor Frame word ENTRY

91	92	93	94	95
0	1	2	3	l;
SFEHLD → SPEHLD →		EX1C MSB	EY1C MSB	EX 2C MSB

108	109	110	111	112
5	6	7	8	9
EY2C MSB	EX1F MSB	EY1F MSB	EX 2F MSB	EY2F MSB

ſ	113	114	115	116	117
	10	11	12	13	14
	NACS4	DELTNA MSB	DELTNE MSB	ITHUNLX MSB	ITHUNLY MSB

118	119	120	121	122
15	16	17	18	19
ITHUNLZ MSB	XPC 2 MS BYTES		YP 2 MS B	

123	124	125	126	127
20	-21	.22	23	24
TWS 2 MS BYTES		NACS5	TAMSTA	MTRAFLG

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ACS TELEMETRY REPORT #6

Minor Frame Number: 13,45,77,109 OBC Telemetry Report Number: 6

Minor Frame word **ENTRY**

ı	91	92	93	94	95
-	SYSMOX	1 SYSPL	SYSMOZ	3	4
	MSB	MSB	MSB	NOMS1	

108	109	110	111	112
5	6	7	8	9
ELXIL MSB	TWXC MSB	ELYIL MSB	TWYC MSB	ELZIL. MSB

113	114	115	116	117
10	11	12	13	14
TWZC MSB	FDC1PR LSB	FDC1Y LSB	FDC1PRF LSB	FDC1YF LSB

118	119	120	121	122
15	16	17	3 8	19
FDC2PR	FDC2Y	FDC2PRF	FDC2YF	XRATDIL

123	124	125	126	127
20	21	22	23	24
XRATDIL	ZRATDIL	FSTATE(1) PITCH LSB	FSTATE(2) ROLL LSB	SAFEIST

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ACS TELEMETRY REPORT #7

Minor Frame Number: 14,46,78,110 OBC Telemetry Report Number: 7

Minor Frame word

ENTRY

Lata

1	91	92	93	94	93
	0	1	2	3	4
	P1 MSB	P2 MSB	P3 MSB	WXC MSB	WYC MSB

108	109	110	111	112
5	6	7	8	9
WZC MSB	PX MSB	PY MSB	PZ MSB	NOMS2

113	114	115	116	117
10	11	12	13	14
	TACS		WGD	X1
	2 MS BYTES		2 MS	BYTES

118	119	120	121	122
15	16	17	18	19
WGDX2		WCDY1		
2 MS BY TES		2 MS	BYTES	

123	124	125	126	127
20	21	22	23	24
WGDY2 2 MS BYTES	WGDZ1 2 MS BYTES		2 MS	DZ2 BYTES

ACS TELEMETRY REPORT #8

Minor Frame Number: 23

OBC Telemetry Report Number: 8

Minor Frame word

ENTRY

i	91	92	93	94	95
Ì	0	1	. 2	3	4
	море	XPOSDIL	XPOSDIL	SMODE 3	SMODE 4

108	109	110	111	112
5	6	7	8	9
ESACNT	MAGULD	FLTROFF	ESASTA	MODE 41

113	114	115	116	117
10	11	12	13	14
TIMUNLX	TIMUNLY	MODE 3I	ECIATT	MODE 11

113	119	120	121	122
15	16	17	18	19
EP"FMFL	FAILW	ICAL	NGXOVFL	NGYOVFL

123	124	125	126	127
20	21	22	23	24_
TIMUNLZ	SUNPRS	IRUSTA	JTHSW	NACS6

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ACS TELEMETRY REPORT #9

Minor Frame Number: 26

OBC Telemetry Report Number: 9

Minor Frame word

ENTRY

1	91	92	93	94	95
	0	1	2	3	4
	IENUNL	INIUNL	ITHSW	MODE 2C	IHTBMD

108	109	110	3.11	112
5	6	7	8	9
DISPAS	ENAPAS	IHTY	IHTZ	SPARE

113	114	115	116	117
10	11	12	13	14
ICAX	IGYY	IGYZ	SENSTA	OFFSET

118	119	120	121	122
15	16	17	18	19
NGZOVFL	ESASEL	ELX MSB	ELY MSB	ELZ MSB

123	124	125	126	127
20	21	22	23	24
NOMS3		NACS1	IMOMUN	MAGREF

ACS TELEMETRY REPORT #10

Minor Frame Number: 27

OBC Telemetry Report Number: 10

Minor Frame word

ENTRY

91	92	93	94	95
0	1	2	3	4
THETBX			TBY BYTES	THETBZ 2 MS BYTES

108	109	110	111	112
5	6	7	8	9
	HWX MSB	HWY MSB	HWZ MSB	MSB HWS

Γ	113	114	115	116	117
	10	11	12	13	14
	MX MSB	MY. MSB	MZ MSB	BEX MSB	BEY MSB

118	119	120	121	122
15	16	17	18	19
BEZ MSB	SELMAG	DHUNLDX	DHUNLDY	DHUNLDZ

123	124	125	126	127
20	21	22	23	24
EXG MSB	EYG MSB	EZG MSB	EXM MSB	EYM MSB

Minor Frame Number: 30,62,94,126

OBC Telemetry Report Number: 11

Minor Frame word **ENTRY**

Data

91	92	93	94	95	
0	1	2	3	ţţ.	
SX-MS BIY FLIGHT SOFTWARE TIME					

108	109	110	111	112
5	6	7	8	9
LS# BIT	SX MS BIT	IT TDE	LTA	

113	114	115	116	117
10	11	12	13	14
LS B1	XXXXX	DPUDCER	FSDPUST	TFRESET

118	119	120	121	122
15	16	17	18	19
SWTCH1	SWTCHY	SWTCHZ	SYSMOY	ITPFAIL

123	124	125	126	127
20	21	22	23	24
SHFAIL	ITPIST	NOMS4		→-NACS2>

Flight Software Time (TF)

@8kbps TF = TDPU + $36msec + (4096*2^{-3}) + (N*4096msec)$ @1kbps TF = TDPU + $36msec + (4096*2^{-0}) + (N*32768msec)**$

@ 1 January,0000hrs TF = 86,400,000msec

*N = 0.1.2,3 each succeeding TF update interval **lkbps timing is unreliable

ACS TELEMETRY REPORT #12

Minor Frame Number: 15,31,47,63

79, 95, 111, 127

OBC Telemetry Report Number: 12

Minor Frame word

ENTRY

Data

91	92	93	94	95
0	1	2	3	4
CN	IGX ——	, [NGY	-CNGZ-

SIGN BIT 2° COUNTS

108	109	110	111	112
5	6	7	8	9
	CN-CN	GX1>	CN	GY1

113	114	115	116	117
10	11	12	13	14
CN(CNGZ1		5X2≫	←CNGY2−

118	119	120	121	122
15	16	17	18	19
	CNGZ2		CNO	GX 3

	123	124	125	126	127
L	20.	21	22	23	24
	CNGY 3		◆ CN	GZ3	00000000 ZERO BYTE

ACS TELEMETRY REPORT #13

Minor Frame Number: 06,38,70,102

OBC Telemetry Report Number: 38

Minor Frame word

ENTRY

91	92	93	94	95
0	1	2	3	4 .
TACSSP	SDSEPFL	SDFUNCT	ACQ1ST	FDCEP

108	109	110	111	112
5	6	7	8	9
EPCNT	ACQRIU	PFDCEP	FPITCH	FPCNT

113	114	11.5	116	117
10	11	12	13	14
PFPITCH	FROLL	FRCNT	PFROLL	ACQFD1

118	119	120	121	122
15	16	17	18	19
WGXK1	WGZK 1	SWTCHIM	MODE2CM	FDCNT1

123	124	125	126	127
20	21	22	23	24
FDCNT2	PFSTAT1	PFSTAT2	CTR120	SKOUT

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ACS OBC TELEMETRY DEFINITIONS

TABLE 2-44

2-214

104NI	INPUT - DRO-[RICH MAST] TELEMETRY	MAST) TI	ELEMETRY.	. MAS: 18 / 29-APR-1982 14:05:04.03	29-APR-19	382 14:	05:04.03		29-APR-82 15:24:42	15:24:42 PAGE 1	
NANF	DPROC	TYPE	TYPE UPROC /	PLI DUNITS	ICHT SOFT	WARE D	FLIGHT SOFTWARE DICTIONARY VI 0-5 TABLE ENTRY LENGTH SCALE UNITS	1 0-5 E UNITS	VALUE	DEF INITION	
HIFTAX	ACS	>		CFGREE	801	0000	0 -5	RADIAN		ANGILLAR INCREMENTS X	
111F 1 A Y	ACS	>		DEGREE	801	0000	S- 0	RADIAN		ANGULAR INCREMENIS Y	
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NGX	UNDER	>	ACS	COUNTS	108	9000	0 24	COUNTS		ROLL GYRO RAW ANGULAR DATA	
NGY	UNDEF	>		COUNTS	801	6000	D 24	COUNTS		PITCH GYRU RAW ANGULAR DATA	
NGZ	UNDEF	>		COUNTS	801	0012	0 24	COUNTS		YAW GYRO RAW ANGULAR DATA	
NGXF	UNUEF	>	VCS	COUNTS	108	9100	D 24	COUNTS		ROLL GYRO FILTERED ANGULAR DATA	
NCVE	UNDEF	>	ACS	COUNTS	108	8100	0 24	COUNTS		PITCH GYRO FILTERED ANGULAR DATA	
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NACSO	ACS	>		COUNTS	108	0024	,	COUNTS		NUMBER OF ACS THRUSTER FIRINGS +PITCH (V14)	101

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PAGE 2			<u> </u>								FY VEHICLE O ECI FRAME	THAT SPECIFY VEHICLE RELATIVE TO ECI FRAME	FY VEHICLE O ECI FRAME	FY VEHICLE O ECI FRAME	ING ARRAY INDE
15:24:42 PI	DEFINITION	ROLL GYRO ANGULAR RATE	PITCH GYRO ANGULAR RATE	VAW GYRD ANGULAR RATE	RATE (X)	RATE (Y)	RATE (2)	ROLL ATTITUDE ERROR	PITCH ATTITUDE ERROR	YAW ATTITUDE ERROR	EULER PARHS THAT SPECIFY VEHICLE ORIENTATION RELATIVE TO ECI FRAME	EULER PARMS WIAT SPECIFY VEHICLE ORIENTATION RELATIVE TO ECI FRAM	EULER PARMS THAT SPECIFY VEHICLE ORIENTATION RELATIVE TO ECI FRAME	EULER PARMS THAT SPECIFY VEHICLE ORIENTATION RELATIVE TO ECI FRAME	OPEN LOOP THRUSTER FIRING ARRAY INDEX
5	OEF	2011	P11(YAW	RATE	RATE	RATI	ROLL	PIT	AVA	EULE	EULE	EULS	EUL 6	OPE
29-APR-82	VALUE														
4.0	UNITS	RAD/CY	RAD/CY	RAD/CY	RAD/SE	RAD/SE	RAD/SE	RADIAN	RADIAN	RADIAN	N.D.	N. O.	N. O.	N.D.	COUNTS
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15-21:42 PAGE 3	DEFINITION	EULFR PARAMETERS RELATING MISSION FRAME 8 ECI FRAME	EULER PARAMETERS RELATING MISSION FRAME & ECI FRAME	EULER FARAMETERS RFLATING MISSION FRAME 6 ECI FRAME	EULER PARAMETERS RELATING MISSIOM FRANE 8 ECI FRANE	EULER PARAMETERS SPECIFYING VEHICLE Urientation Rel to desired ortentation	EULER PARAMETERS SPECIFYING VEHICLE Orientation Rel to desired orifntation	EULER PARANETERS SPECIFYING VEHICLE ORICHTATION REL 10 DESIRED ORIEMTATION	EULER PARAMETERS SPECIFYING VEHICLE Grieniation Rel 10 destred ortentation	ROLL ATTITUDE ERROR INTEGRAL	PITCH ATTITUDE ERROR INTEGRAL	11HBUSTER OW/OFF CHED WORD. BIT 1. +ROLL, 2ROLL, 3. +PITCH, 4PITCH, 5. 4AW, 6YAW, 1-ON, 0-OFF. 5. AW, 6YAW, 6YAW, 6YAW, 1-ON, 0-OFF.
29-APR-82	VALUE											
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/ 29-APR-1982 14 05:04 03	TABLE	803	803	803	803	603	803	803	803	803	803	600
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15:24:43 PAGE 4	DEFINITION	YAW ATTITUDE ERROR INTEGRAL	ROLL ATTITUDE ERROR DOUBLE INTGRAL	PITCH ATTITUDE ERROR DOUBLE INTEGRAL	YAW ATTITUDE ERROR DOUBLE INTEGRAL	ROLL WIEEL CMD	PITCH WHEEL COMMAND	YAW WHEEL COMMAND	ROLL ATTITUDE RATE ERROR	PITCH ATTITLIDE RATE ERROR	YAW ATTITUDE RATE ERROR	ROLL ORBIT ADJUST THRUSTER CMD COMPUTATION SIGNAL	PITCH ORBIT ADJUST THRUSTER COMMAND COMPUTATION SIGNAL	YAN DRBIT ALIJUST THRUSTER COMMAND COMPUTATION SIGNAL	PITCH POSITION ERROR BIAS	YAW POSITION ERROR BIAS	SKEW WIEEL OUT OF LIMITS FLAG. 0:IN LIMITS, 1:OUT OF LIMITS
29-APR-82	VALUE														•	-0.148E-01	
(1.0.5 E UNITS	RAD.SE	RSEC+2	RSEC+2	RSEC+2	N.D.	Z. O.	N.D.	RAD/SE	RAD/SE	RAN/SE	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	N.O.
4 03	FLIGHT SOFTWAKE DICTIONARY VI.O.S TABLE ENTRY LENGTH SCALE UNITS	4	ø	6	o	-	-	-	7	7	7	-	-	-	7	7	•
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15:24:43 FAGF 5	DFFINITION	O: SAFEHOLD NOT ENTERED BY OBC <>Q: RELATIVE LUC SAFEHOLD CALLED FROM. (VISA) 1020982VIGDO	ROLL EARTH SENSOR 1 COARSE ATTITURE ERROR (CORRECTED V15A)	PITCH EARTH SENSOR I COARSE ATTITUDE ERROR	ROLL EARTH SENSOR 2 COARSE ATTITUDE ERROR	PITCH EARTH SENSOR 2 COARSE ATTITUDE ERROR	ROLL EARTH SENSOR 1 FINE AITITUDE FRROR	PITCH EARTH SENSOR I FINE ATTITUDE ERROR	ROLL EARIIS SENSOR 2 FINE ATTITUDE CRROR	PIICH EARTH SENSOR 2 FINE ATTITUDE ERROR	NUMBER OF ACS THRUSTER FIREMGS -PITCH (V14)	TORS ANTERNA AZIMUTH ANGULAR ACCELERATION	TORS ANTENNA ELEVATION ANGULAR ACCELERATION	ROLL WIEEL TIRUSTER UNLOADING PULSE COUNTER	PITCH WIELL THRUSTER INLANDING PILLSE COUNTER	YAW WHEEL TIRUSTER UNICADING PULSE COUNTER	CALIBRATED FSS X AXIS DATA(NOTE ACS REFERS TO THIS ITEM AS XP)	CALIBRATED FSS Y AXIS DATA (NOTE ACS REFERS TO THIS ITEM AS YP)	SKEW WIEEL COMMAND	MESSER OF ACS THRUSTER FIRINGS +YAU
29-APR-82	VA! UE																			
ų, 0	UNITS	0 2	RAUIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	COUNTS	R/S+2	R/S•2	COUNTS	COUNTS	COUNTS	N.D.	χ. Ö.	N.D.	COUNTS
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* DRO - [RICH, MAST] FELEMETRY, MAS; 18 /	ST INTIO	Z. O.	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE	COUNTS	DEG/S+2	DEG/S+2	CRUNTS	COUNTS	COUNTS	N.D.	N.D.	N.O.	COUNTS
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29-APR-82 15:24:43 PAGE 6	S VALUE DEFINITION	MAGNETIC ACON, 1:DN, 0:DFF	NO CHANNEL A MOTOR CURRENT FAILED FLAG
•	VI.O.3	7 N.D.	YES/NO
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1982 14	ENTRI	805 0023 W	0024
29-APR-	TABLE	805	805
RY MAS; 18 / 29-APR-1982 14-05-04-03	DUNITS	N.O.	YES/NO
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INPUT . DBO [RICH MAST]TELEMETI	DPROC	A CS	ACS
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15:24:43 PAGE 7	DEFINITION	ROLL SYSTEM MOMENTUM	PIICH SYSTEM MOMENTUM	YAW SYSTEM MOMENTUM	NUMBER OF MS OA TIRUSTERS FIRED +PITCH (VIA)	LIMITED ROLL WIEEL CONTROL SIGNAL FILTERED INCE	LIMITED ROLL WIEEL CONTROL SIGNAL FILTERED TWICE	LIMITED PITCH MIEEL CONTROL SIGNAL FILTERED ONCE	LIMITED PITCH WHEEL CONTROL SIGNAL FILTERED TWHCE	LIMITED YAW WHEEL CONTROL SIGNAL. FILTERED ONLE	LIMITED YAW WHEEL CUNTROL SIGNAL FILTERED TWICE	ENABLE PITCH/ROLL SYSTEM FAILURE Detection. O:Disabled. 1:Enabled. (V14)	ENABLE YAW SYSTEM FAILURE DEIFCTION. O:Disabled, 1:Enabled. (VI4)	PITCH/ROLL SYSTEM FAILURE DETECTION FLAG. O:NO FAILURE. 1:FAILURE (VI4)	YAW SYSTEM FAILURE DETECTION FLAG. O:NO FAILURE. 1:FAILURE. (VI4)	ENABLE PITCH/ROLL GYRD FATLURE Detection. O:Diabled. 1:Enabled. (via)	ENABLE VAW GYRO FAILURE DETESTION. O:DISABLED. 1:ENABLED. (V14)	PITCH/ROLL GYRO FAILURE DEFECTION FLAG. O:NO FAILURE 1:FAILURE. (VI4)	YAW GYRO FAILURE DETECTION FLAG O:NO FAILURE : FAILURE: (VI4)	ROLL RATE DITEMMA FLAG
29-APR-82	VALUE				_				-,-						-					
ti C	STINU 31	IMSEC	NMSEC .	NWSEC	MSEC	NMSEC	NIMSEC	NMSEC	NMSEC	NMSEC	NMSEC	Z. A.	й. А.	×.	« »	4	N. A.	χ. Α. Α.	χ. Α.	¥ .
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29-APR-19R2 14:05:04.03	1 ARI E	306	908	908	806	806	806	806	806	909	806	806	806	806	806	806	900	908	806	808
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PAGE		EMMA FLAG	MA FLAG	TCH FAILURE 2=FY1C OUT. 11. S=EY8EY2C IT. 7*ALL OUT	LL FAILURE 2*EXIC OUT. 17. 5*EX8EX2C 17. 7*ALL OUT	FOR SAFEHOLD
15:24:43	DEFINITION	PITCH RATE DILEMMA FLAG	YAN RATE DILEMMA FLAG	NORW/OA FDC PITCH FAILURE STATE. O=ALL OK. i=EV OUT. 2=FY1C OUT. 3=EY8EY1C OUT. 4=EY2C OUT. 5=EY8EY2C OUT. 6=EY1C6EY2C OUT. 7=ALL OUT.	NORE/GA *UC ROLL FAILURE STATE. O=ALL OK. 1=EX OUT. 2=EXIC OUT. 3=EXBEXIC DUT. 4=EX2C OUT. 5=EX8EX2C OUT. 6=EXICSEX2C OUT. 7=ALL OUT.	IST PASS FLAG FOR SAFEHOLD INTERLOCK
29-APR-62 15:24:43	VALUE	•				
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29-APR-	FLIGHT SOFTWARE DICTIONARY VI O'S TABLE ENTRY LENGTH SCALE UNIT	806	806	808	908	908
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- Indu	NAME	YRAIDII	ZRAIDIL	FSTATES	FSTATE2	SAFFISE

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15-24-43 PAGE 9	DEF INITION	TORS ANTERMA TOPONE IN S/C AXIS ROLL.	TORS AMERIAN TOROUE IN SIC AXIS PITCH	TDRS ANTERAIN TOROUE IN S/C AXIS YAW	COMANDED VEHICLE BATES - ROLL	COMMANDED PITCH RATE	COMMANDED YAN RATE	ROLL THRUSTER URA. GADING CONTROL STONAL	PITCH TINUSTER UNICADING CONTROL SIGNAL	YAW THRUSTER UM DADING CONTROL SIGNAL \(\)	MARGER OF MS OA TIROUSTERS FIRED -PITCH (VIA)	ACS CYCLE COUNTER	ROLL GYRO DIFFERENCES CHANNEL 1. COUNTS ARE EQUIVALENT HIGH RATE CORNES: DBC NURMALIZES THIS DATA BASED UPON GYRO HI//LD RATE STATUS \(1.12987V17D)	ROLL GYRG DIFFERENCES CHARMEL 2. COUNTS ARE EQUIVALUNT HIGH RATE CORNES; GJC HORMALIZES THIS DATA BASED UPON GYRA HIJ/LO RATE STATUS \032982VITDQ	PITCH GYRO DIFFERENCES CHARDEL 1. COUNTS ARE EGUIVALENI HIGH RATE COINTS; ORC RAPMALIZES THIS DATA BASED UPOW GYRO HI/LO RATE STATUS \0312982VITDO	PIICH GYRD DIFFERENCES CHAMPIEL 2. COUNTS ARF EQUIVALENT HICH RATE COUNTS: OBC MORMALLZES THIS DATA BASED UPON GYRO HE/LD RATE STATUS \032987V17D0	VAN GYRO DIFFERENCES CHANGEL 1, COUNTS ARE EQUIVALENT HIGH RATE CHANTS, OBC NORMALIZES THIS DATA BASED UPON GYRO HIT/ /LO RATE STATUS \037987V1700	
29 - APR - 82	VALIJE															•		
1	0-5. UHI 15	N D.	N. D.	o O	RAD/SE	RAD/SE	RAD/SE	PAMSEC	NWSEC	PMSEC	MSEC	N.A.	COUNTS	COURTS	COUNTS	COUNTS	COUNTS	
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5:24:43 PAGE 10	DEFINITION	YAN GYRO DIFFERENCES CHAMMEL 2. CUMMTS ARE EQUIVALENT HIGH RATE COUNTS; DBC NORMALIZES THIS DATA BASED UPON GYRO HI//LO RATE STATUS \032982V1709
82 15	jo	* # 8 4 1
29-APR-82 15:24:43	VALUE	
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;	CALE	17 COUNTS
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29-APR-	PLIMITS TABLE ENTRY LENGTH SCALE UNITS	807
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15:24:43 PAGE 11	DEFINITION	MODE FLAG 1: LOCAL VERF ACO 2: YAW AXIS ACO 3: SIELLAR ACQUISITION 4: EARTH POINTING MODE 7: ORBIT ADJRIST	ROLL POSITION DILEMMA FLAG	PITCH FOSTITON DILEMNA FLAG	STELLAR ACO, SUBMODE O: ECI ATT. Initialize 1: Eci attitude update 2: Eci att. update done	EARTH FOINTING SUBMODE 1: EARTH POINTING MUNE 2: STELLAR POINTING MODE	NUMBER OF ESA FAILURES	MAGNETIC TORQUER ENABLE FLAG (1:ENA.	GYRO PREFILIERS ENABLE FLAG 1:0N. 0:0FF	ESA IN USE	EARTH PUINTING INITIALIZE FLAG (0:015.	WHEEL UNLOADING TIMER FOR ROLL	WHEEL UNLOADING TIMER FOR PIICH	STELLAR ACCUISITION INITIALIZE FLAG (0:DIS, 1:ENA)	ECI ATTITUDE STATE FLAG O: ECI NOT INITIALIZED 1: ECI NOT VET UPDATED 2: UPDATED ECI AVAILABLE 3: STELLAR ACO. CO OMPLETE	EARTH ACQUISITION INITIALIZE FLAG (0.DIS, 1:ENA)	EPHEMERIS SOURCE SELECTION FLAG (0:GPS. <>0:UPLINK)	BAD REACTION WISEL FLAG: 1: ROLL WISEL FAILED 2: PITCH WISEL FAILED 3: YAW WISEL FAILED 3: YAW	ACQUISITION/EARTH POINTING FLAG (0-2:ACQ, 3:EP)	X-AXIS GVRO OVERFLOW CTR
29-APR-82	VALUE	_						0	0		0			0		c	-	0	•	
(COUNTS	N.D.	Z.D.	COUNTS	COUNTS	N.D.	N.O.	YES/NO	N. D.	VES/NO	SECOND	SECOND	YES/NO	COUNTS	VES/ND	VES/NO	N.D.	YES/NO	N.O.
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1982 14:	ENTRY	0000	<u>000</u>	0005	6000	0004	9000	9000	1000	8000	6000	00 00	100	0012	6100	0014	00 15	9100	7100	81.08
/ 29-APR-1982 14:05:04.03	IGHT SOF	808	808	808	808	808	808	808	808	808	808	808	808	808	808	808	808	808	808	808
8	FL DUNITS	COUNTS	N.D.	N.D.	COUNTS	COUNTS	N.D.	N.D.	YES/NO	N.0.	YES/NO	SECOND	SECOND	YES/NO	COUNTS	YES/NO	YES/NO	N. O.	YES/ND	N.O.
- ONO: [RICH.MAST] FELEMETRY MAS:	TYPE UPROC /	٩	>	>	>	>	>	Q	۵	>	- a	•	•	۵	>	a		۵	۵	>
NO: [RICH.	DIROC	ACS	ACS	ACS	VCS	ACS	ACS	ACS	ACS	VCS	VCS	ACS	ACS	ACS	VCS	ACS		VCS	VCS	ACS
14001 = 00	NAMF	MODE	XPOSDN.	YFOSDIL	SMODE3	SMODEA	ESACNT	MAGULD	FLIROFF	FSASTA	MODE 41	1 1 PRI JEAL X	1 JMUIALY	MODE 31	FCIATT	MODE 11	EPHEMFL	FAILW	ICAL	NGXOVF1.

29-APR-82 15:24:44 PAGE 12	DEFINITION	Y-AXIS GYRO DVERFLOW CTR	WIEEL UNLOADING TIMER FOR YAW	SUN PRESENCE FLAG O: NO SUN IN FSS FOV I: SUN IN FSS FOV	**** S P A R E **** \042782V17DQ	THRUSTER SWITCH TIMER INITIALIZATION	NUMBER OF ACS THRUSTER FIRINGS -YAW
R-82	_			•			•
29-AP	VALUE						
(.0.5 UNI TS	N.D.	SECOND	О. У	•	æ.o.	COUNTS
23	SCALE	,	7	~	•	1	,
05.04	LENGI	>	v	>		>	>
982 14:	ENTRY	6100	0000	0021	0022	0023	0024 [£] · ₩
:18 / 29-APR-1982 14:05:04 03	FLIGHT SOFTWARE DICTIONARY VI.O.5 TABLE ENTRY LENGTH SCALE UNIT	808	808	808	808	808	808
. 18	FL DUNITS	R.D.	SECOND	o z	,	N.D.	COUNTS
ELEMETRY	FLIGHT SOFTWARE DICTIONARY VI.O-5 TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS			SCP	-		-
MAST] F	TYPE	>	>	>		>	>
HUTUT + DUO (RICH MAST)TELEMETRY MAS	DPROC	A(.5	ACS	ACS	ACS	ALS	ACS
1. 10.841	NAME	NGYOVFI	1 1 1 14 11 11 2	SURPRS	SPARL	ASILISA	MACSG

ORIGINAL	PAGE 10
OF POOR	OHALITY

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							. GOM	-11 A					=							0	cto	ber
15,24-44 PAGE 13	DEFINITION	HIGHUSTER UMLOAD EMABLE FLAG (1:FMA,	THRUSTER UM DAD INIT FLAG (1: INIT.	EARTH ACON, THRUSTER CTUR, SWITCH	EARTH/YAW URBIT PLANE ACQUISITION COMPLETION FLAG	BACKUP 0/A FLAG (O:NORMAL OA.	I ST PASS FLAG FOR CABIT ADAUST TIRUSTERS OFF. I-FIRST THRUSTER OFF PASS, O-MOT FIRST PASS	1ST PASS FLAG FOR DABIT ADJUST THRUSTERS IN. 1-FIRST THRUSTER ON PASS. O-NOT FIRST PASS (TO BE DELETED)	COMPUTED INSTERESTS FLAG FOR PITCH	COMPUTED HYSTERESIS FLAG FOR YAW	**** SPARE **** (VI4)	GYRO REDUNDANCY SELECTION FLAG FOR ROLL	GYRO REDUNDANCY SELECTION FLAG FOR PITCH	GYRO REDIMBACCY SELECTION FLAG FOR YAN	GYRO HI/LO RAIE MODE FLAG. USE BITS 8,7,6	OFFSET POINTING PLAG (1:OFFSET, <>1:NO OFFSET)	Z-AXIS GYED OVERFLOW COUNTER	ESA SELECITON FLAG (1:UNIT 1.	ACON WIEEL CIR.X ERROR SIGIAL	ACOM WIEEL CTR.Y ERROR SIGNAL	ACON WIEEL CIR. Z ERRUR SIGNAL	MARBER OF MS OA THRUSTER FIRED +YAW (VIA)
29-APR-82	VALUE	•	•			•							_	_		c						
		9	о 2		2	0 <u>S</u>						_		_		•		о <u>Р</u>			٠.	. ,
4	VI.O.5 ALE UNIT	VES/NO	VES/140	ĸ.D.	YES/NO	7E5/NO	N.D.	N. D.	2 €	Z 0.		N.D.	M.O.	₩.D.	Ğ.	₩. ₩	: 0	YES/NO	N.D.	M.D.	N.D.1	MSEC
	ũ	•	-	7		_	,	•	7	•	•	1	7	-	-	a-	-	1	~	7	~	20
14.05 04 03		>	>	>	>	>	>	>	>	>		>	>	>	>	**	>	>	v	v	v	v
982-14	ENIRY	9300	1000	0005	0000	0000	5000	9000	1000	8000	6000	00 00	1100	2100	6100	6014	2100	9100	1100	8100	6100	0000
29-APR-1982	FLIGHT SOFTWARE DICTIONARY , TAGLE FRIRY LENGTH SO	808	609	809	608	609	809	803	809	803	809	809	909	809	608	999	808	809	809	8 09	809	803
18	7. DOM115	YES/NO	YES/110	и D.	YES/MO	YES/NO	7. 0.	Z. D.	Z.0	N.D.	•	N.D.	N.O.	N. O.	N.C.	N.A.	N.D.	YES/NO	N.D.	N.D.	æ.0.	MSEC
CIRY.	/ 20																					
TELEM	1 YPF 1780C /	-	=		-					-	-	ACS	ACS	ACS		-		-				
MAST]	1 1 0	c	۵	>	>	c.	>	>	>	>	•	>	>	>	>	(6,	>	c		•	•	c.
HULLI = DBO [RICH MAST]IELEMETRY, MAS	DFPOC	\$ Ü V	ACS	VCS	ACS	ACS	A C5	ACS	ACS	٧٤٧	ACS	LIPADE F	UNDEF	uraiff	ACS	A6S	۷۲۶	ACS	VCS	ACS	VCS	ACS
] = 1(1.911	PLAME	IFTARRA	17111111	ASILLI	MODE 2C	011840	015PAS	I HAPAS	,	11117	SPARE	וטנא	1617	10.72	STUSTA	8FFSFF	11570VI L	FSASFL	F1 K	, :	F1.7	PHIMST
									;	2-2:	27											

29-APR-B2 15:24:44 PAGE 14	DEFINITION	NUMBER OF ACS THRUSTER FIRINGS +ROLL (V14)	MOMENTUM SFLECT FLAG (1.SYS MOMS, <>1: MILL MOMS)	O:NOT AT MAGENTIC REFERENCE. 1:5/C AT OR PAST MAG REFERENCE
29-APR-82	VALUE	•	0	
u 6	E UNITS	COUNTS	YES/NO O	N.D.
04 03	PLICH SUFFRAKE UTCHTUNARY VI.C.5 DUNITS TABLE ENTRY LENGTH SCALE UNITS	~	•	•
:05	֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	>	3	>
1982 1	EHIR	0022 ₩	0023	0024 V
29-APR	TABLE	609	808	609
MAS; 18 / 29-APR-1982 14:05 04 03	OUNITS	COUNTS	YES/NO	N.D.
INPUT . DRO:[RICH.MAST]TELEMETRY	TYPE UPROC /	>	۵.	>
DRO: [RICH	UPROC	ACS	ACS	ACS
· mani	FLAME	NAC'S 1	HOMIN	MAGREF

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					OR OF		NAL OOR		AGE UAL	: IS YTI.		FRAME	; FIELD	TELO	. t 51	RUSTERS		TUSTERS					Oct
15:24:44 PAGE 15	DEFINITION	ROLL GYRO RATE BIAS (RAD / SEC)	PITCH GYRO RATE BIAS (RAD / SEC)	YAW GYRD RATE BIAS (RAD / SEC)	ROLL WIEEL MOMENTUM	PITCH WIEEL MOMENTUM	YAW WIEEL MOMENTUM	SKEW WIEEL HOMENTUM	ROLL AXIS TORQUER BAR CND	PIICH AXIS TORQUER BAR CMD	YAW AXIS TORQUER BAR CMD	EARTH'S MAGNETIC FIELD VEHICLE FR COMPONENTS	PITCH COMPONENT OF EARTH MAGNETIC FIELD	YAW COMPONENT OF EARTH MAGNETIC FIELD	MAGNETOMETER SELÉCT FLAG (1 IS MAG	ROLL MOMENTUM TO BE REMOVED BY THRUSTERS	PITCH MOMENTUM TO BE REMOVED BY THRUSTERS	YAY MOMENTUM TO BE REMOVED BY THRUSTERS	ROLL IRU POSITION (GYROS & MAGNETOMETERS)	PITCH TRU POSITION (GYROS & MAGNETOMETERS)	MAGNETOMETERS)-(NOT USED)	ROLL TAM POSITION	PITCH TAM POSITION
29-AFR-82	VALUE	0	0	0																			
	VI.O-5	RAD/CY	RAD/CY	RAD/CY	NMSEC	NIMSEC	NMSEC	NMSEC	CNTSX	CNTSY	CNTSZ	GAUSS	GAUSS	GAUSS	N.O.	NMSEC	NWSEC	NMSEC	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
,	5	- 16	- 16	- 16	ú	'n	ហ	ហ	7	1	7	-	-	-	1	6	60	6	-	-	-	-	-
05:04	LENG	۵	٥	٥	v	v	S	S	v	s	s	v	v	v	>			•	•				
982. 14:	SOFIWARE DICTIONARY ILE ENTRY LENGTH SO	0000	0005	4000	9000	0000	8000	6000	. 0100	. 1100	0013	613	0014	0015	9100	7100	8100	6100	0000	9021	0022	0023	0024
29-APR-1982-14:05:04.03	FLIGHT SOF	9 10	910	9 10	8 10	B 10	9 10	9 10	8 10	8 10	8 10	810	8 10	910	010	8 10	8 10	8 10	9 10	8 10	9 10	610	8 10
5:10 /	FLT DUNITS	ARCS/CY	ARCS/CY	ARCS/CY	NMSEC	NMSEC	NMSEC	NMSEC	POLE.CM	PULE, CM	POLE.CM	GAUSS	CAUSS	GAUSS	7. D.	NMSEC	NMSEC	NMSEC	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE
LEMETRY.	TYPE UPROC /		= -		_	=								_					-				
MAST) TE	TYPE	۵	۵	۵	>	>	>	>	>	>	>	>	>	>	c		•		ı		,	•	i
+ DBO-[RICH, MAST]TELEMETRY, MA	DPROC	ACS	ACS	VCS	ACS	ACS	ACS	VCS	ACS	VCS	ACS	ACS	ACS	VCS	VCS	ACS	V CS	VCS	ACS	VCS	ACS	ACS	ACS
INPUT + D	NAME	1115 1183	111E 18Y	1117 1112	AFUI	AIMA	ZMI	SAU	X X	μ	м2	RCX	nf v	85.2	SFLMAG	DIRINI.DX	OI BINI OY	DIRINI DZ	FXG	EYG	626	EXM	EYM

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										0	F PC	OR	Q	JALII	Y
15:24:44 PAGE 16	DEFINITION	FLIGHT SOFTWARE TIME	OPU TIME-FLICHT SW TIME	COUNT OF THE NUMBER OF DPU TIME DECODING ERRORS	FSW TIME STATUS, BIT1:DECODE ERRORS, BIT2:ABS(TDELTA) > TFOX, O=ND, 1*YES. BIT3:TF RESET BIT4:DPU<*TF BIT5:RESET IN41 BY DPU H/W STATUS, O42702V17DQ	COUNTER OF THE NUMBER OF FLIGHT SOFTWARE THE THE	1:+MAG 2:-MAG 3:1RU 4:ESA ACON CTL. INPUT	1:PITCH ORB HATE BIAS ENABLED 2:DISABLED	1:YAW RATE STABILIZATION 2:YAW Gyro-compass	PITCH SYSTEM MOMENTUM	# OF CONSECUTIVE TIMES GYROS + TACHS READ 2ERO	# CONSECUTIVE CYCLES S/H STATUS SET	ITP LOCKUP INITIALIZATION FLAG	NUMBER OF MS DA THRUSTERS FIRED -YAW (VI4)	NUMBER OF ACS THRUSTER FIRINGS -ROLL (VIA)
29-APR-82	VALUE	•							•						
4.0	E UNITS	MSEC	MSEC	Z.0.	Ö.	N.D.	ë.	Z. O.	N.O.	NMSEC	Z.O.	N.D.	N.O.	MSEC	COUNTS
, 60 1	ENTRY LENGTH SCALE UNITS	38	38	r	-	•	•	7	1	60	~	7	7	20	-
05:0	LEN	-	<u>-</u>	>	3	>	>	>	>	v	3	>	>	S	3
982 14	ENTRY	0000	9000	0012	6100	0014	0015	90 16	7100	8100	6100	0000	0021	0022	0024
/ 29-APR-1982 14-05:04 03	TABLE	811	8 1 1	118	89 11	1.		811	811	811	£	118	8 1 1	8 -	118
	DUNIT	SEC	SEC	O.	х О.	N.O.	N.D.	Z.D.	N.D.	NMSEC	N.D.	Z.D.	N O	MSEC	COUNTS
EME 1R	TYPE UPROC /	ACS	ACS	VCS -	ACS	VCS -	-	=					=		
181 181	TYPE	>	>	>	>	>	>	>	>	>	>	>	>	>	>
INPUT . UBO. [RICH MAST]TELEMETRY.MAS; 18	NPRUC	SCP	SCP	SCP	SCP	URADEF	ACS	ACS	ACS	ACS	ACS	ACS	ACS	ACS	ACS
· IU-NI	NAME .	16	IDEL TA	DPUOCER	FSNPUST	THRESET	SWICHT	SWICHY	SWICH	SYSMOY	IIPFAIL	SHFA14	181411	NOMS4	NACS2

2				512	512	512	.024	.024	.024	.536	. 536	. 936	
PAGE	1 10	01 1	AT 10	COLPUT X AT 10+.512	GYRD RATE COUNT V AT 104.512	Z AT TO1.512	GYRO RAIE COUNT X AT TO-1.024	GYBO RASE COUNT Y AT TO-1.024	Z AT 10+1.024	X AT TO+1.538	GYRO RATE COUNT Y AT TO+1.536	RATE COUNT Z AT TO11.536	<u> </u>
	A X IX	NI V A	7	W X 18c	W A INC	NI Z A	M X M	M V A	M 2 M	N X A	A 7 M	N 2 IN	RB #02
106	1E COU	re cou	TE COUNT		1E CON	TE COUNT	16 ¢00	7E COU	RAIE COUNT	RATE COUNT	1E COU	TE COU	TE (FS
15:24:44 DEF INT I ION	GYRO RATE COUNT X AT TO	GYRD RAIE COUNT Y AT TO	GYRO RATE	GYRO RATE	YRO RA	GYRO RATE	YRO RA	YRO RA	GYRO RA	GYRO RA	YRO RA	GYRO RA	ZERO BYTE (FSRB #028)
29-APR-82	Ū	Ū	ŭ	ŭ	ŭ	Ū	·	J	·	J	J	J	•
.0.5 UNITS	COUNTS	COUNTS	COURTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COMMIS	•
SCALE	2	7	=	2	:	=	2	7	2	:	=	:	
/ 29-APR-1982 14-05:04.03 FLIGHT SOFTWARE DICTIDHARY V1.0-5 TABLE FHTRY LENGTH SCALE UNITS	٥	٥	a	0	٥	۵	٥	٥	٥	0	ت	۵	1
1982 14 · TWARE D ENTRY	0000	0005	4000	9000	8000	000	0012	90 I4	90 00	8100	0000	0022	0024
29-APR-19 ICHT SOFT TABLE	812	812	612	812	812	812	812	812	812	812	912	812	812
MAS: 18 DUNITS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	COUNTS	
STJIELEMETRY TYPE UPROC /	-												
MAST JI	>	>	>	>	>	>	>	>	>	>	>	>	
LUIVUT - URO;[RECH MAST]EEL UANE DPROC TYPE U	. \$ 2 V	ACS	VCS	ACS	ACS	ACS	ACS	ACS	ACS	ACS	VCS	VCS	ACS
TUPLE -	CPKIK) torres	Ctv.7	CHGKI	CHC,Y 1	CHG7.1	CH: CZ	CHG/2	C1K:72	CHUKO	CHULA	6,416,73	SPARE

SVS-10	1234
Volum	ig II
October	1982

										OF	iGi P	NAL OOR	PA(QU		IS TY	£3	<u>e</u>				¥C		otobe Vol	
15-24:48 PAGE 45	PETINITION	2 SEPARATION SWITCH TIMER	2 SEPARALION SWITCH OPEN FLAG	SOLAR ARRAY DEPLOY FURCTION	FIRST TIME THRU CODE FLAG	ESA EP. BITT:ESAT BITZ:ESA2 1::EP	EARTH PRESENCE FAIL STATE COUNTER	BIU 4A AND 4B COSSIANDED ON FLAG. BIT1:4A BIT2:4B	PREVIGUS ESA EP STATE	PIICH ESA > 1187 BITT:ESA! BITZ:ESAZ	PITCH CONSECUTIVE > THR COUNT	PREVIOUS PITCH > THR STATE	ROLL ESA > 1147 STATE BITT:ESA! BITZ:ESA2	ROLL CONSECUTIVE > 118 COLMI	PREVIOUS ROLL > THR STATE	IST TIME THEOREM YAW ACON. FDC	IRU 2 ROLL RATE GUT OF THRESIGNED COUNTER	IRU 2 YAN RATE GUT OF THRESIGLD COUNTER	RECORD OF SWICH!	RECURD OF MODE2C	CONSECUTIVE ERROR COUNTS FOR PITCH NORMED	CONSECUTIVE ERROR COUNTS FOR ROLL NORME	PREVIOUS FAILURE STATE PITCH, 1:ATT DET OUT 2:ESA! GUT 3:ESA2 OUT	PREVIOUS FAILURE STATÉ WOLL. 1:ATT DET OUT 2:ESA! OUT 3:ESA2 GU!
29-APR-62	VALUE				o			•	•	0	0	•		0	0	0	0	0	0	0				
,	VI.0.5 NE UNITS	CYCLES	N.D.	N.D.	O	D M	N.0.	Z, D.	N.D.	Z.0.	N.D.	₩.D.	Z.O.	Z, O.	H.O.	Z.O.	N.D.	N.D.	₩,0	M.O.	78. O.	٠ 0	₹.D.	R.O.
/ 29-APR-1982 14 05-04 03	-	,	~	•	•	•	•	•	•	•	•	^	•	•	r	•	,	•	7	~	•		•	•
8) LE	*	>	Þ	Þ	•	>	>	Þ	>	>	Þ	>	Þ	>	>	*	>	æ	*	>	>	Þ	>
1982 14	FTWAPE ENTRY	0000	000	0005	0003	4000	9000	9000	000	8000	6000	000	100	0012	6100	8	815	90 0	0011	8	6100	0050	0051	0022
79-APR-	1GHT 501 1ABLE	838	838	939	838	838	838	838	938	838	838	828	838	838	838	838	828	838	828	838	838	838	838	938
8	FL DUNITS	CYCLES	₹.0°.	0 Z	0 2	N.D.	₽.D.	N.O.	0	N.0.	Z.0.	0	N.D.	₩.O.	N.O.	Z. O.	N.D.	N.O.	N.0.	0 2	N.O.	N.O.	N.D.	R.D.
HHULT + DRO [PICH.MAST]TELEMETRY MAS:	TYPE UPROC /	>	>	>	>	. >	>	>		>	>	>	. >	>		>	>	>	>		>		>	- >
RO [PICH	DPROC	AGS	ACS	ACS	ACS	VCS	ACS	ACS	AC\$	ACS	ACS	ACS	ACS	ACS	ACS	ACS	ACS	ACS	ACS	ACS	۷۲۶	≯ C\$	ACS	sv
Iravi • D	UAME	TACSSP	1143505	SULUNCE	ACUIST	FUCEP	EPCHE	OTHOU	Procee	11011111	FPCNI	. 577.17.1	1 1681 1	FRCME	P F P D 1 L	ACOFDI	WG/K 1	WG7K!	SWICHIN	HUUE 2CM	f DC11 1	CHCHE2	Prstati	PFSIAI2

1:24:48 PAGE 46	DEFINITION	COUNTS 120 SECONDS SINCE SKEW WHEEL COMMANDED TO A CONSTANT SPEED. B CTS->120 SECONDS	# OF CONSECUTIVE CYCLES SKEW MIEEL SPEED OUT OF LIMITS
82 15	ö	885	≈ ÿ.
29-APR-82 15:24:48	VALUE		0
9	STIM	7 MFRANE O	CYCLES 0
1.03	STH SCALE		^
:05:0		>	>
1982 14	ENTRY	9 CO03	0024 W
29-APR	TABLE	838	838
MAS: 18 /	DUNITS	MFRAME	CYCLES
EL EMETRY	UPROC /	-	
MAST JT	TYPE	>	>
DBO-{RICH	HAME DEROC TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS	ACS	ACS
Itanu .	PIAME	C1R120	SKOUT

TABLE 2-45

UPDATE FILTER OBC TELEMETRY REPORTS

UPDATE FILTER TELEMETRY REPORT \$1

Minor Frame Number: 28

OBC Telemetry Report Number: 24

Minor Frame word

ENTRY

1	91	92	93	94	95
	0	1	2	3	4
ſ	← S	1	S	2	S3
İ	2 MS 8	BYTES	2 MS	BYTES	2 MS BYTES

108	109	110	111	112
5	6	7	8	9
	S	4	S	5
	2 MS	BYTES	2 MS I	BYTES

113	114	115	116	117
10	11	12	13	14
2 MS	S6 ————————————————————————————————————	4	- PM 11(1)	•

118	119	120	121	122
15	16	17	18	19
	4	PM 11(2)-		

123	124	125	126	127
20	21	22	23	24
4	——— РМ	11(5)	>	FHST

UPDATE FILTER TELEMETRY REPORT #2

Minor Frame Number: 29

OBC Telemetry Report Number: 25

Minor Frame word	91	92	93	94	95
ENTRY	0	1	2	3	4
Cata	•	FM	11(5)		•

108	109	110	111	112
5	6	7	8	9
	PM 11(6)		PM	11(9)

113	114	115	116	117
10	11	12	13	14
			DM 22(1)	
			PM 22(1)	

118	119	120	121	122
15	16	17	18	19
		Du :	12(2)	
		PW A	22(2)	•

123	124	125	126	127 -
•		22(3)		NFAIL 1

UPDATE FILTER TELEMETRY REPORT #3

Minor Frame Number: 35

OBC Telemetry Report Number: 26

Minor	Frame	word		
	Frame word			

ENTRY .

91	92	93	94	95	
0	1	2	3	4	
	PN 22(5)				
Fill 22(3)					

108	109	110	111	112
5	6	7	8	9
PM 22(6)			∞——Р М	22(9)

113	114	115	116	117	
10	11	12	13	14	
	D00 4040				
PA1 12(1)					

118 119 120 1	21 122
15 76 17	18 19

123	124	125	126	127
20	21	22	- 23	24
	PAI 12(3)			

Minor Frame Number: 36

OBC Telemetry Report Number: 27

Minor Frame word ENTRY

91	92	93	94	95		
0	1	2	3	ų		
PM 12(4)						

108	109	110	111	112
5	6	7	8	9
	- PM 12(5) -	PM 1	2(6)	

10	11	12	13	14
			l ————————————————————————————————————	

118	119	120	121	122
15	16	17	18	19
		214 1	2(0)	
		PM I	2(8)	

123	124	125	126	127	
20	-21	22	23	24	
	PM 12(9)				

Minor Frame Number: 55

OBC Telemetry Report Number: 28

Minor Frame word ENTRY

91	92	93	94	95
0	1	2	3	4
Kı	l(1)	K	1(2)	K(1)(3) 2MS BYTES
	BYTES	2 MS	BYTES	2 MS BYTES

108	109	110	111	112
5	6	7	8	9
	K 1(4)		. К	I(5) BYTES
	2 MS	K1(4) 2 MS BYTES		BYTES

113	114	115	116	117
10	11	12	13	14
2 MS	BYTES	KI1 2 MS	(1) BYTES	KI1(2) 2 MS BYTES

118	119	120	121	122
15	16	17	18	19
	KI1(3) 2 MS BYTES		KI1(4) 2 MS BYTES	

123	124	125	126	127
20	21	22	- 23	24
	KI1(5) 2 MS BYTES		(6) BYTES	SPARE

Minor Frame Number: 68

OBC Telemetry Report Number: 29

Minor Frame word ENTRY

91	92	93	94	95
0	1	. 2	3	4
xs			YS	
2 MS	2 MS BYTES		BYTES	LSB

108	109	110	111	112
5	6	7	8	g
SCP 12 LSB	SCP 22 LSB	SCKL LSB	SCKH LSB	SCKIL LSB

113	114	115	116	117
10	11	12	13	14
SCKIH LSB	STRST01	STRST02	STRST03	STRST04

118	119	120	121	122
15	16	17	18	19
STRST05	STRST06	STRST07	STRST08	STRST09

123	124	125	126	127
20	21	- 22	23	24
STRST10	STRST11	STRST12	STRST13	STRST14

ORIGINAL PAGE IS

OF POOR QUALITY UPDATE FILTER TELEMETRY REPORT #7

Minor Frame Number: 90

OBC Telemetry Report Number: 30

Minor Frame word

ENTRY

91	92	93	94	95
0	1	2	3	4
TP MS BYTE	2 MS	Z1 BYTES	2 MS	Z2 BYTES

108	109	110	111	112
5	6	7	8	9
H1 2 MS	H1(1) 2 MS BYTES		(2) BYTES	H1(3) 2 MS BYTES

113	114	115	116	117
10	11	12	13	14
	H2(1) PAS BYTES		2 MS B	(2) YTES

118	119	120	121	122
15	16	17	18	19
2 MS E	(3) BYTES	2 MS B		VS2 2 MS BYTES

123	124	125	126	127
20	21	22	23	24
	RS MS BYTE			

Minor Frame Number: 91

OBC Telemetry Report Number: 31

Minor Frame word ENTRY

91	92	93	94	95
0	1	2	3	4
	TAM BYTES	PH 2 MS	IM BYTES	XSC ZMS BYTES

108	109	110	111	112
5	6	7	8	9
	 SPARE→	-SPARE>	ZSC 2 MS BYTES	

113	114	115	116	117
10	11	12	13	14
>	(P	اسا	/P	XPE
2 MS	BYTES	2 MS	BYTES	2 MS BYTES

118	1 19	120	121	122
15	16	17	18	19
	YPE 2 MS BYTES		P COUNT	K COUNT

123	124	125	126	127
20	21	22	23	24
LS 2 MS E		LSY 2 MS BYTES		SPARE

ORIGINAL PAGE IS

OF POOR QUALITY UPDATE FILTER TELEMETRY REPORT #9

Minor Frame Number: 92

OBC Telemetry Report Number: 32

Minor Frame word

ENTRY .

91	92	93	94	95
0	1	2	3	4
LSZ 2 MS BY			SX BYTES	SY 2 MS BYTES

108	109	110	111	112
5	6	7	8	9
•	IS MS BYTE	TS MS BYTE	ISTR	LASTID1

113	114	115	116	117
10	11	12	13	14
LASTID2	TRY	ISC .	NCA	NCAMAX

118	119	120	121	122
15	16	17	18	19
PASS	STRCAT	VSD	UFDTREQ	ST

123	<u>1</u> 24	125	126	- 127
20	21	22	23	24

UPDATE FILTER TELEMETRY REPORT #10

Minor Frame Number: 93

OBC Telemetry Report Number: 33

Minor	Frame	word				
ENTRY						
Data						

91	92	93	94	95
0	1	2	3	4
	1			
		U		SPARE

				SPARE
5	6	7	8	9
108	109	110	111	112

113	114	115	116	117
10	11	12	13	14
← SC	v 	XXXXXX	→ SC	UI

118	119	120	121	122
15	16	17	18	19
××××××	•	T(JS	

123	124	125	126	127
20	21	22	23	24
			CDARE	
		SPARE		

Minor Frame Number: 96

OBC Telemetry Report Number: 34

Minor Frame word

ENTRY

	91	92	93	94	95
	0	1	2	3	4
-		SC	2 MS	H BYTES	TST 1 MSB

108	109	110	111	112
5	6	7	8	9
2 MS	V———⊳ BYTES	TST 2 MSB	ST1T MSB	ST2T MSB

113	114	115	116	117
10	11	12	13	14
SPARE	STRST15	STRST16	STRST17	STRST18

118	119	120	121	122
15	16	17	18	19
STRST19	STRST20	STRST21	STRST22	STRST23

123	124	125	126	127
20	21	22	23	24
STRST24	STRST25	STRST26	STRST27	STRST28

TABLE 2-46

UPDATE FILTER OBC TELEMETRY DEFINITIONS

ORIGINA OF BCO	L PAGE	1~
OF PCO	R QUALI	IS TV

Insul	· DRO [RIC	II. MAST	INFUT - DRO [RICH.MAST]TELEMETRY MAS; 18 / 29-APR-1982 14-05:04.03	MAS: 18 /	29 - APR - 1	982 14	05:04.0			29-APR-82	15:24:46 PI	PAGE 30		
11 A ME	DPROC	1	TYPE UPROC / DUNITS	FI DUNITS	FIIGHT SUFTWARE DICTIONARY VI.O.S. TABLE ENTRY LENGTH SCALE UNIT	IWARE D	3H SOFTWARE DICTIONARY VI.O-5 TABLE ENTRY LENGTH SCALE UNITS	SCALE	0-5 UNITS	VALUE	DEFINITION			
5	111111111111111111111111111111111111111	>		ARCSEC	824	0000	s	ň.	RAUSAN		ESTIMATED ROLL ATTITUDE DETERMINATION ERROR	DE DETERM	INATION	
25	3 5	>		ARC. SEC	. 824	0003	G	ů.	RADIAN		ESTIMATED PITCH ATTITUDE DETERMINATION ERROR	JOE VETERI	AINAT LON	
23	UFLTR	>		ARCSEC	824	900	0	Sp.	RADIAN		ESTIMATED YAW ATTITUDE DETERMINATION ERROR	OETERNII	4A110M	
S.4	UFLIR	>		ARCS/S	B24	9000	۵	-11	RAD/SE		ESTIMATED ROLL GYRO BIAS COMPENSATION ERROR	IAS COMPEI	VSATION	~
\$5	WFL 18	>		ARCS/S	824	8000	٥	.17	RAD/SE		ESTIMATED PITCH GYRO BIAS COMPENSATION ERROR	JIAS COMPI	INSAT I ON	
ອ	UFLTR	>		ARCS/S	824	00100	٥	-11	RAD/SE		ESTIMATED YAV GYRO BIAS COMPENSATION ERROR	IS COMPEN	3A 1 1 OH	
- N	UF1 18	>		RAD •• 2	824	0012	Q	- 12	RAD2	,	(1) ELEMENT OF ATTITUDE ERRUR COVARIANCE MATRIX. SCALED BY SCP11	JE ERRUR NLED BY SC	=	
FM112	UFLIR	>		RAD2	824	90 16	٥	-	RAD. • 2	,	(2) ELEMENT OF ATTITUDE ERROR COVARIANCE MATRIX. SCALED BY SCP11	DE ERROA Ned by Sc	110	
F.M.1.33	UF1 18	>		RAD •• 2	824	0020	٥	=	RAD2		(3) ELEMENT OF ATTITUDE ERROR COVARSANCE MATRIX. SCALED BY SCP11	DE ERROR ALED BY SO	=	
1311	UFI IR	۵		1/2	824	0024	>		1/2	~	STAR TRACKER SELECTION FIELD. 1-STAR IRACKER 1. 2-STAR TRACKER 2.	FIELD.	-STAR	

29-APR-82 15:24:46 PAGE 31	VALUE DEFINITION	(5) ELEMENT OF ATTITUDE ERROR COVARIANCE HATRIX. SCALED BY SCP11 (V14)	(6) ELEMENT OF ATTITUDE ERRUR COVARIANCE MATRIX. SCALED BY SCP11 (V14)	(9) ELEMENT OF ATTITUDE ERROR COVARIANCE MATRIX. SCALED BY SCP11 (V14)	(1) ELEMENT OF GYRD BIAS ERROR COVARIANCE HAIRIX, SCALED BY SCP22 (V14)	(2) ELFMENT OF AYRO BIAS ERROR COVARIANCE MATRIX. SCALED BY SCP22 (V14)	(3) ELEMENT OF GYRD BIAS ERROR COVARIANCE MATRIX. SCALED BY SCP29 (VI4)	CATA CON ANTINION TOURISTS AS ASSAULT
	2	RAD••2	RAD••2	RAD••2	(R/S)2	(R/S)2	(R/S)2	:
/ 29-APR-1982 14-05:04.03	TABLE ENTRY LENGTH SCALE UNITS	- 11 - R	3 11 -	. 11 B	.38	.35	.35	
05:04.	LENGTI	۵	٥	۵	۵	٩	۵	
982 14. IVARE D	ENIRY	0000	9000	8000	00 12	9100	C030	
29-APR-1	TABLE	875	825	825	825	825	825	
MAS: 18 /	,	RAD++2	RAD •• 2	RAD •• 2	(R/S)2	(R/S)2	(R/S)2	
LEMETRY.	TYPE UPROC / DUNITS		-	-	-		-	
MAST JTE	1 APE	>	>	>	>	>	>	
INDIN - DIO (RICH MAST)TELEMETRY, MAS; 18 / 29-APR-1982 14-05:04.03	DUNGOC	חנווש	UFLIR	UFLTR	UFLTR	וורוצ	UFLIR	
- 10/11/11	NAME	PMTIS	PM 1 16	P#1119	PM221	PM722	PM223	

DEFINITION	(5) ELEMENT OF GYRN BIAS ERROR COVARIANCE MATRIX. SCALEO BY SCP22 (V14)	(6) ELEMENT OF GYRD BIAS ERROR COVARIANCE MATRIX. SCALED BY SCP22 (V14)	(9) ELEMENT OF GYRO BIAS ERROW COVARIANCE MATRIX, SCALED BY SCP22 (V14)	(1) ELEMENT OF ATTITUDE DETERMINATION AND GYRO BIAS COMPENSATION CRUSS COVARIANCE MATRIX SCALED BY SCP12.	(2) ELEMENT OF ATTITUDE DETERMINATION AND GYRO BIAS COMPENSATION CROSS . COVARIANCE MATRIX SCALED BY SCP12. (V14)	(3) ELEMENT OF ATTITUDE DETFRMINATION AND GYRO BIAS COMPENSATION CROSS COVARIANCE MATRIX SCALED BY SCP12.	STAR ID FAILURE COUNTER FOR STAR
VALUE	•						0
UNITS	(8/8)3	(R/S)2	(R/S)2	R•2/5E	R+2/SE	R•2/SE	¥. ¥.
TI SCALE	-35	-38	-35	- 26	-26	-26	
16891	۵	۵	•	G	٥	a	3
FNTR	0000	9000	8000	00 12	90 16	0030	0024
TABLE	826	826	826	826	926	978	826
DUNI 15	(R/S)2	(R/S)2	(R/S)2	R.2/SE	R.2/5E	R+2/SE	N.A.
UPROC /	-						UFLTR
TYPE	>	>	>	>	>	>	>
DPROC	WF1 1R	UFLIR	U1 18	UFI. IR	UFLTR	UFLTR	LIFT TR
NAME	PM225	PM226	PM229	PM121	P4122	P.M.123	NF A 11 2
	DERIC TYPE UPROC / DUNITS TABLE FNTRY LENGTH SCALE UNITS VALUE	DERIC TYPE UPRUC / DUNITS TABLE FNTRY LENGTH SCALE UNITS VALUE S UFITR V (R/S)2 B26 0000 D -35 (R/S)2	DFRUC TYPE UPRUC / DUNITS TABLE FNTRY LENGTH SCALE UNITS VALUE S UFLIR V (R/S)2 826 0000 D -35 (R/S)2	DFRUC TYPE UPRUC / DUNITS TABLE FURRY LENGTH SCALE UNITS VALUE S UFLIR V (R/S)2 826 0000 D -35 (R/S)2	DURING TYPE UPRUC / DUNITS TABLE FNTRY LENGTH SCALE UNITS VALUE G UFLIR V (R/S)2 826 0000 D -35 (R/S)2	5 UFLIR V (R/S)2 826 0000 D -35 (R/S)2 6 UFLIR V (R/S)2 826 0004 D -35 (R/S)2 7 UFLIR V (R/S)2 826 0008 D -35 (R/S)2 7 UFLIR V (R/S)2 826 0008 D -35 (R/S)2 7 UFLIR V R.2/SE 826 0012 D -26 R.2/SE	DIPHOC TYPE UPRUC / DIMITS TABLE FURRY LENGTH SCALE UNITS VALUE B. UFLIR V (R/S)2 826 0000 D -35 (R/S)2 UFLIR V (R/S)2 826 0008 D -35 (R/S)2 UFLIR V R.2/SE 826 0016 D -26 R.2/SE UFLIR V R.2/SE 826 0016 D -26 R.2/SE

ORi	GINAL	PAGE	13
OF	POOR	QUALI	TY

29-AFR-H2 (5:24:46 FAGF 33	VAL')E DEFINITION	(4) ELFMENT OF ATTITUDE DETERMINATION AND GYRO BIA'S COMPENSATION CROSS COVARIANCE MAIRIX SCALED BY SUP12.	(5) ELEMENT OF ATTITUDE DETERMINATION AND GYRO BIAS COMPENSATION CROSS COVARIANCE MATRIX SCALED BY SCF12.	(6) ELEMENT OF ATTITUDE DFICEMINATION AND GYRO BIAS COMPENSATION CROSS COVARIANCE MATRIX SCALED BY SCP12.	(7) ELEMENT OF ATTITUDE CETERMINATION AND GYRO BIAS COMPENSATION CROSS COVARIANCE MATRIX SCALED RY SCP12.	(B) ELEMENT OF ATTITUDE DETERMINATION AND GYRD BIAS COMPENSATION CROSS COVARIANCE MATRIX SCALED BY SCP19.	(9) ELEMENT OF ATTITUDE DETERMINATION AND GYRO BLAS COMPENSATION CROSS COVARIANCE MATRIX SCALED BY SCP12.	
	S .	R•2/SE	R•2/SE	R+2/SE	R+2/SE	R•2/SE	R•2/SE	
					à			٠
/ 29-APR-1982 14:05:04.03	TABLE ENTRY LENGTH SCALE UNITS	-26	-26	-26	- 26	-26	-26	•
:05:	3 3	٥	c	٥	٥	٥	٥	•
1982 14	ENTRY	0000	9000	0000	0012	90 16	0020	0024
9-APR-	TABLE	827	827	827	827	827	827	827
15:18	511W0	R-2/SE	R+2/SE	R•2/SE	R•2/SE	R•2/SE	R•2/SE	
INPUT + DRO [RICH MAST]TELEMFIRY MA	TYPE UPROC /	-	-					
MAST	17	>	>	>	>	>	>	٠
uno [RICH	DFROC	UIT I TR	UFLTR	N1 110	UFLTR	UFLIR	UFLTR	117.1
10961	ИЛМЕ	FM124	Ги 125	961MJ	FM127	FR128	PH129	SPARF

										ORIG Cif F	inal Pocr	PAC QU;	E IS	;
94		#1 GAIN SCKH.	#1 GAIN SCKH.	#1 GAIN SCKH.	#1 GAIN SCKH.	#1 GAIN SCKH.	#1 GAIN SCKH.	#2 GAIN 5 SCKIH.	#2 GAIN 5 SCK111.	#2 GAIN D SCKIH.	#2 GAIN D SCKIH.	#2 GATH 5 SCKIN.	#2 GAIN 5 SCKIH.	
PAGE		MEASUREMENT BY SCKL AND	MEASUREMENT BY SCKL AND	MFASUREMENT BY SCKL AND	MEASUREMENT BY SCKL AND	MEASUREMENT #1 GAIN BY SCKL AND SCKH.	MEASUREMENT #1 GAIN BY SCKL AND SCKH.	MEASUREMENT BY SCKIL ARK	HEASUREMENT BY SCKIL AND	MEASUREMENT BY SCKIL AM	MEASUREMENT BY SCKIL AN	MEASUREMENT #2 GAIN BY SCKIL AND SCKIN.	MCASUREMENT BY SCKIL AN	
15:24:46	DEF INITION	(1) ELEMENT OF MEASUREMENT MATRIX. SCALÍD BY SCKL AND	(2) ELEMENT OF HEASUREMENT MATRIX. SCALED BY SCKL AND	(3) ELEMENT OF WFASUREMENT #1 GAIN MATRIX, SCALED BY SCKL AND SCKH.	(4) ELEMENT OF MEASUREMENT #1 GA Matrix, Scaled by Sckl and Sckii.	(S) ELEMENT OF MEASUREMENT MATRIX. SCALED BY SCKL AND	(6) ELEMENT OF MEASUREMENT MATRIX. SCALED BY SCKL AND	(1) ELEMENT OF MEASUREMENT #2 GAIN MATRIX. SCALED BY SCKIL AND SCKIH.	(2) ELEWENT OF WEASUREMENT #2 GAIN MATRIX, SCALED BY SCKIL AND SCKIN	(3) ELEMENT OF MEASUREMENT #2 GAIN WATRIX. SCALED BY SCKIL AND SCKIH.	(4) ELEWENT OF WEASUREWENT #2 GAIN MATRIX, SCALED BY SCKIL AND SCKIH;	(5) ELEMENT OF MEASUREMENT #2 GAIN MATRIX, SCALED BY SCKIL AND SCKIN.	(6) ELEMENT OF MCASUREMENT #2 GAIN Matrix. Scaled by Sckil and Sckiii	SPAR
29-APR-82	VALUE		-		•	-	•	- •		- -	_		-	-
ď,	UNITS	RA/RA	RA/RA	RA/RA	R/S/R	R/S/R	R/S/R	RA/RA	RA/RA	RA/RA	R/S/R	R/S/R	R/S/R	•
.03 Vask	TABLE ENTRY LENGTH SCALE UNITS	VAR	VAR	VAR	VAR	VAR	VAR	VAR	VAR	VAR	VA 3	VAR	VAR	•
.05:04	LENG	۵	۵	۵	۵	۵	c	٥	٥	٥	٥	<u> </u>	٥	•
982 14	ENTRY	0000	0003	0004	9000	0000	00 10	00 12	9014	9100	8100	0020	0022	0024
/ 29-APR-1982 14-05:04.03	1401 E	828	828	828	628	828	828	828	828	828	828	828	828	828
MAS: 18 /	DUNI 1	RA/RA	RA/RA	RA/RA	R/S/R	R/S/R	R/S/R	RA/RA	RA/RA	RA/RA	R/5/R	R/S/R	R/S/R	•
EL EMETRY	TYPE UPROC /	-		-	-		-	-			-		-	
MAST 11	IYPE	· >	>	>	>	>	>	>	>	>	>	>	>	·
HIPUL . PRO [RICH MAST]LELEMETRY.MAS:18 / 29-APR-1982 14-05:04.03	UPROC	ULLIR	11/1 18	UFI TR	UFITR	11/11R	11/1.18	UFLTR	11/1 18	UfLTR	UFt TR	UFI TR	UFI TR	UFI TR
Ingul	FIAME	ž	K 12	ж 6	K14	K 15	K16	X 	K1 12	KI 13	Х 2	KI 15	K1 16	SPARE

			RIGIT	VAL OOR	P/ QI	AGE UAL	IS ITY		Z		α	~~~								00		olum er	
15:24:46 PAGE 35	DEFINITION	TRACKED STAR LOS VECTOR CUMPONEMIS Along tracker	COMPENSATED STAR TRACKER MEASUREMENT ALONG Y AXIS	SCALE OF PHII ELEMENTS	SCALE OF PHI2 ELEMENTS	SCALE OF PHIS ELEMENTS	SCALE OF K1.2.3, FOR FIRST PASS THRUGAIN MATRIX COMPUTATION	SCALE OF K4.5.6, FOR FIRST PASS THRUGAIN MATRIX COMPUTATION	SCALE OF KI1,2,3 FOR 2NN PASS TIPU GAIN MAIRIX COMPUTATION	SCALE OF K14,5,6, FOR 2ND PASS THRUGAIN MATRIX COMPUTATION	STATUS WORD FOR STARS 1 & 2, V19, TWO ADJACENT 4 BIT GROUPS, WITH STAR (N) THE UPPER 4 RITS, STAR (N+1) THE LOWER FOUR.	STATUS WORD FOR STARS 3 & 4 (VIS). BIT CODING: BIT 1*Y VARIANCE PASS Y/N. BIT 2*X VARIANCE PASS, Y/N. BIT 3*INTENSITY PASS Y/N. BIT 4*DRDIT ANGLE P	STATUS WORD FOR STARS 5 & 6 (VIS)	STATUS WORD FOR STARS 7 & B (VIS)	STATUS WORD FOR STARS 9 & 10 (VIS)	STATUS WORD FOR STARS II & 12 (VIS)	STATUS WORD FOR STARS 13 & 14 (VIS)	STATUS WORD FOR STARS IS A 16 (VIS)	STATUS WORD FOR STARS 17 & 18 (VIS)	STATUS WORD FOR STARS 19 & 20 (VIS)	STATUS WORD FOR STARS 21 & 22 (V15)	STATUS WORD FOR STARS 23 6 24 (VIS)	(
29-APR-82	VALUE																						
	E UNITS	M.D.	N.D.	N.O.	N.D.	Z.O.	N.D.	N.D.	Z.O.	Z O.	N.D.	N.O.	N.D.	N.0.	N.D.	%.D.	₹.0.	N.O.	N.O.	N.0.	N.D.	N. C.	
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0.50	LEN	v	S	v	S	S	S	W	v	v	>	3	>	>	. *	>	*	*	>	Þ	*	>	
1982 14:	FNIRY	0000	0003	0004	9000	9000	0001	8000	6000	00 10	8	20012	0013	00 14	0010	90 00	0011	8100	0019	0050	1 200	0002	
/ 29-APR-1982 14:05-04.03	TABLE	829	829	629	829	829	829	829	629	829	829	829	829	629	629	029	829	829	6 28	829	829	829	
8	DUNITS	N.D.	N.O.	N.D.	N.O.	N.D.	N.D.	N.D.	N.D.	N.D.	х О.	č.	N.D.	N.D.	N.D.	N. O.	N.D.	N.D.	G Z	N.D.	N.D.	N,D.	
- DRO. [RICH, MAST]TEL FMFTRY MAS:	TYPE UPROC /	>		>	 >		>	>	>	>		>	>		>		>	>	>	>	>	>	
nno. [RICH.	חרוחם	1)(1)	וונרוצ	UF1 1R	HFL TR	UFLTR	UFLIR	UFLTR	UFLIR	UFLTR	Uft.1R	UFLTR	UFLTR	UFLTR	115.57.18	UFLTR	UFLIR	UF L. TR	UFLTR	UFLTR	UFLIR	ווגרוש	
1111111	NAME	ı. ×	٧,	5CF 11	SCP 12	SCP22	SCKI	SCKH	SCKII	SCKIII	S1PS101	S185102	\$185103	S1R5104	511/511/9	\$185106	5185107	8118418	5185109	SIRSTIO	1118418	\$105112	

PAGE 36		STATUS WORD FOR STARS 25 & 26 (VIS)	STATUS WORD FOR STARS 27 & 28 (VIS)
15:24:47	DEF INITION	STATUS WORD FOR	STATUS WORD FOR
29-APR-82 15:24:47	VALUE		
٠.	UNITS	N.D.	N.0.
00 20 20 20 20 20 20 20 20 20 20 20 20 2	II SCALE	7 N.D.	7 N.O.
05:04	LENGI	>	>
982 14:	ENTRY	829 0023 W	0024 ₩
29 - APR - 1	TABLE	829	829
MAS: 18 /	DUNITS	0. 10.	.0. .0.
NPUT + 080-(RICH MAST) FELEMETRY	TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS	- >	>
BO- (RICH)	DEROC	IRSI 13 UFLIR	UFLIR
N-11-IN	IAME	188113	1185114

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15:24:47 PAGF 37	DEFINITION	PROPAGATION INTERVAL	UPDATE SENSOR MEASUREMENT RESIDUALS. FOR STAR TRK ONLY MODE SC**3. FOR STAR TRK*FSS MODE SC**2.	UPDATE SFNSOR MEASUREMENT RESIDUALS. Same scale note applies.	(1) ELEMENT OF UPDATE FILTER MEASUREMENT VECTOR	(2) ELEMENT OF UPDATE FILTER MEASUREMENT VECTOR	(3) FLEMENT OF UPDATE FILTER Measurement Vector	(1) ELEMENT OF UPDATE FILTER Measurement Vector	(2) ELEMENT OF UPDATE FILTER MEASUREMENT VECTOR	(3) ELEMENT OF UPDATE FILTER Measurement Vector	MEASUR, RESIDUAL ACCEPTABL ACCURACY CRITERIA FOR 111E X STAR TRACKER.	MEASUR, RESIDUAL ACCEPTARL ACCURACY CRITERIA FOR THE Y SIAR TRACKER.	VEH.ORBIT ROTATION ANGLE	**** SPARE ****	···· SPARE ····	**** SPARE ****
29-APR-B2	VALUE				-	_		-	_	_						
	V1.0-5 ILE UNITS	SECOND	RADIAN	RADIAN	N.D.	N.D.	N.D.	N O.	N.D.	N.D.	RADIAN	RADIAN	RADIAN			•
,	ਹ	6	ç.	ć.	0	c	0	c	0	0	ç	ç	c			•
.05:04.	LENGI	v	v	v	s	•	v	ın	v	s	v	v	v	•	•	
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5:18 / 29-AFR-1982 14-05:04.03	FLIGHT SOFTWARE DICTIONARY TABLE ENTRY LENGTH S	830	830	830	830	830	830	. 830	830	830	830	830	830	830	830	830
5: 18	FL DUNITS	SECONO	ARCSEC	ARCSEC	O	N.O.	M.D.	И.О.	N.O.	N.O.	ARCSEC	ARCSEC	DEGREE	•		
IELEMETRY A	TYPE UPROC /			<u>-</u> .	-	-		=		-		-				
135VM	1 4 6	>	>	>	>	>	>	>	>	>	>	>	>	•	•	•
INPUT . DBO-(RTCH MAST)TELEMETRY MA	DPROC	UT! 18	W 118	1711 178	UFL 18	UFL TR	UF1 1R	, 051.18	UF L TR	UFLTR	1351, 18	UFLTR	UFLTR	UF LTR	UF1 TR	116.38
INFU!	HAME	5	;	c2	=	2111	Ξ	1 211			157	457	r.	SPARF	SPARF	SPARE
									_							

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ingul :	080	RICH.	MAST] TEL	IRPUT * DBO [RICH.NAST]TELENETRY MA	5: 18	S; 18 / 29-AFR-1982 14:05.04.03	382 14:	05.04.0			29-APR-82	15:24:47 PAGE 38	
NAME	UPROC	20	TYPE (TYPE UPROC /	PL.	FLIGHT SOFTWARE DICTIONARY TABLE ENTRY LENGTH SC.	ENIRY	WARE DICTIONARY VI.O.5 ENIRY LENGTH SCALE UNITS	SCALE		VALUE	DEFINITION	
HIFLAM	AL 1R	<u>ء</u>	>		DEGREE	831	0000	v	Ļ	RADIAN		COMPENSATED STAR TRACKER MEASUREMENTS	
FILE	UF! IR	8	>		DEGREE	831	0000	s	. J	RADIAN		FULLY COMPENSATED STAR TRACKER.	
XSC	UF1 1R	<u>α</u>	>	-	Z.D.	108	000	v	ç	Z.D.		TRACKED STAR LOS UNIT VECTOR ALONG STAR Tracker X axis	œ
SPARE	UFLTR	<u>ت</u>				168	9000	•		•		**** S P A R 6****	
3\$¢	UF! TR	<u>ع</u>	>	-	N.D.	1691	8000	v	ç	N.D.		TRACKED STAR LOS UNIT VECTOR ALONG STAR TRACKER 2 AXIS	œ
, x	UFL ?R	Œ	>	_	Ö.	108	00 10	v	•	N.D.		COMPENSATED (FOR ABERRATION) FSS ROIL Axis Weasurement	
۲.	UFLIR	2	>	-	a. Z	831	2001	v	0	N.D.		COMPENSATED (FOR ABERRATION) FSS PITCH AXIS MEASUREMENT	
ХРŧ	UFLIR	Œ	>		. O. Z	831	0014	w.	0	N.O.		EXPECTED FSS MEASUREMENT FOR X AXIS	
¥PE	UFLIR	~	>		₽.0.	158	90 16	s	•	N.D.		EXPECTED FSS MEASUREMENT FOR Y AXIS	
PCOUNT	UF1 1R	81	>	UFLIR	COUNTS	108	8100	•	^	COUNTS	0	COUNT OF # OF TIMES THROUGH COVARIANCE MATRIX PROPAGATION	
KCOUIII	UFLTR	2	>	UFLTR	COUNTS	831	6100	>	,	COUNTS	0	COUNT OF # OF TIMES THROUGH GAIN MATRIX COMPUTATION	×
154	UF L TR	<u>«</u>	>		N.D.	831	0030	vo	•	N.D.		COMPONENTS OF MEASURED STAR LOS ALONG VEHICLE X AXIS	
1 57	UC1 1R	<u>*</u>	>		N.O.	831	0022	v	0	N.D.		SAWE FOR Y AXIS	
SPARE	11.118	<u>×</u>	•		,	831	0024	ı	,			***** A A A A A ****	

		LS USFD	51	(\$14)	RY (VIS)		CKER #1	CKER #2	1-DATA BEEN	01	ORI OF	Gil\ PO	OR	QUA	E I	70 8¢ A	(0: 1		0	V	olu	0123 me I 198
DEF INI 1 10N	SAME FOR Z AXIS	STAR TRACKER MEASURFMENT RESIDUALS USED IN STAR ID	STAR TRACKER MEASUREMENT RESTOUALS	STAR TRACKER INTENSITY TELEMETRY (VIS)	STAR TRACKER TEMPERATURE TELEMETRY (VIS)	JDENTIFIED STAR INDEX	LAST STAR IDENTIFIED BY STAR TRACKER	LASI STAR IDENTIFIED BY STAR TRACKER #2	UPDATE SENSOR SEQUENCE COUNTER. 1-DAT/ FROM THE FIRST UPDATE SENSOR HAS BEEN CHECKED. 2-BOTH CHECKED.	# OF STARS IN CAFALOG THAT PASS I	INDEX OF ACCEPTED STAR	# OF STARS IN CATALOG	INDEX FOR GAIN MATRIX COMPUTATION	FLAG USED TO INDICATE A NEW CATALOG O'NOT LOADED. 1:LOADFO. (VI4)	VALID STAR DATA FLAG	UPDATE FILTER DATA REQUEST FLAG (DELETED)	STAR TRACKER CONFIGURATION FLAG (O ST, 1 FSS : 1: 2 ST)	····	**** SFARE ****	····· SFARE ····	**** SFABE ****	••••• STATS
VALUE						0	0		0	0	•	0	0		0	-						
V1.0-5	A.D.	RADIAN	PADIAN	1 MC	1 MC	N.D.	N.D.	N O.	N. O.	N.D.	N.A.	N.A.	N.D.	YES/NO	YES/NO	Z.D.	YES/ND	,	•	•	•	
•	0	0	c	80	æ	7	1	1		•	7	•	1	7	1	1		•		•		
LFNG	s	v	v	>	>	>	*	>	>	>	>	>	>	>	>	v	3		•			
FLIGHT SOTTWARE DICTIONARY TABLE ENTRY LENGTH SO	0000	0005	0004	9000	0001	9000	6000	00 00	200	0012	0013	0014	0015	9100	7100	81 00	6100	0020	0021	0022	0023	0024
IGHT SO	832	832	832	832	832	832	832	837	832	832	832	832	832	832	832	832	632	832	832	832	832	832
S	Z.	ARCSEC	ARCSEC	VOLTS	VOLTS	N. O.	N.D.	Z. O.	N. D.	N.D.	и. В.	N.A.	Z. D.	YES/ND	YES/NO	N.D.	YES/ND	•		•	ı	•
TYPE UPROC /			'		-	UFLTR	UFLIR		UFLIR	UFLTR	UFLTR	UFLTR	UFLTR		UFLTR							
IYP	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	e.	•	•	•	•	
NAME INPRICE TYPE UPROC / DURIT	UFLIR	ווגרוש	UFLTR	UFLIR	UFL 1R	UFLIR	UFLIR	טרנות	UFLTR	UFLIR	UFLTR	UFLTR	UFLIR	UFLTR	UFLTR	UFLTR	UFLIR	ULLIR	UFI 1R	UFLIR	UFL 1R	1156.18
NAME	251	×	<u>ئ</u> ئ	13	21	1518	131101	151102	Y N	25.1	NUA	NCAMAX	PASS	SIRCAI	VSD	UFDTRFQ	SI	SPARE	SPARE	SPARE	SPARE	SPARE

Inani	HIPLI - 1110; [RICH, MAST] JELEMEIRY, MAS; 18 / 29-APR-1982 14:05:04.03	1. HAST T.	ELEMETRY.	MAS; 18 / 2	19-APR-1	982 14:	05:04.03	;	٠	29-APR-82 15:24:47	15:24:47 PAGE	4 0
NAME	DFROC	IVPE	IVPE UPROC / DUNITS	FLI DUNI 1S	TABLE	TVARE D	FLIGHT SOFTWARE DICTIONARY VI.O-5 ; TABLE ENTRY LENGTH SCALE UNITS	SCALE L	J-5 JNITS	VALUE	DEF INITION	
3	UFLIR	>	-	RADIAN	833	0000	ء	VAR R	RAUJAN		UF RESIDUAL VARIANCE	
SPARE	UFLTR		-	•	833	0004		•			SPARE	
5	UFLTR	>		1/RAD	833	9000	٥	VAR	1/RAD		INVERSE OF U	
SPARE	UFLIR	•	*	,	833	6000	•	•			SPARE	
SC.U	UF L.TR	>	UFLTR	R.A.	633	00.10	v	17	N. A.	0	SCALE OF U	
SCUI	UFLTR	>	UFLTR	N.A.	833	0013	v	17 R	N.A.		SCALE OF THE INVERSE OF U	_
\$111	Urire	>		MSEC	833	9100	-	38	MSEC		LAST CYCLE FLIGHT SOFTWARE TIME \032482V17DB	E TIME
SPARL	. מנונות				833	0022	Ō	•			SPARE	
SPARE	UFLIR	•		•	833	0023	,	•			SPARE	
SPARE	UF1 TR	•			833	0024		•			SPARE	

			Ę							OR OF	IGIN PC	NAL OOR	P# QI	IGE JAL							,	VS- Vol obe	ume	II
PAGE 41			STAR LOS UNIT VECTOR ALGING STARY Y AKIS	STAR TRACKER HORIZONITAL MEASUREMENT (CORRECTED VIS)	STAR INIFNSITY DATA FROM STAR TRACKER	VERTICAL MEASUREMENT	INTENSITY DATA FROM STAR TRACKER DRRECTED VIS). SEE OR #265.	DATA FROM STAR TRACKER #1 (15). SEE UR #265.	DATA FROM STAR TRACKER #2	- R E	FOR STARS 29 & 30 (V15)	FOR STARS 31 6 32 (VIS)	FOR STARS 33 8 34 (VIS)	FOR STARS 35 & 36 (VIS)	FOR STARS 37 8 38 (VIS)	FOR STARS 39 & 40 (VIS)	FOR STARS 41 & 42 (VIS)	FOR STARS 43 8 44 (VIS)	FOR STARS 45 & 46 (VIS)	FOR STARS 47 & 48 (VIS)	FOR STARS 49 & 50 (VIS)	FOR STARS 51 & 52 (V15)	FOR STARS 53 & 54 (VIS)	FOR STAR 55 (VIS)
15.24.47	DEFINITION		TRACKED STAP LE TRACKER Y AKIS	STAR IRACKER HOS (CORRECTED VIS)	STAR INTENSITY DATA	STAR TRACKER VEI (CORRECTED VIS)	STAR INTENSITY DATA	TEMPERATURE DATA (CORRECTED VIS)	TEMPERATURE DATA (CORRECTED VIS)	N 4 2	STATUS WORD FOR	STATUS WORD	STATUS WURD	STATUS WORD	STATUS WORD	STATUS WORD FOR								
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	V1.0-5	2	N. O.	FHSTC	COUNTS	riis1c	COUNTS	COUNTS	COUNTS		R. 0.	N.O.	Z. Ö.	N. O.	O	N. O.	N.D.	N.O.	N.O.	¥.0.	Z .O .	N.O.	Z. O.	R.O.
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29-APR-19R2 14-05-04,03	1GH 508		834	₩34	834	834	834	834	834	834	834	834	834	834	834	834	834	834	834	834	834	834	634	834
MAS: 18 /	F1	S I I VOO	O. Z	DEGREE	COUNTS	DEGREE	COUNTS	V0L TS	VOLTS		N. D.	N.D.	N.0.	Z. O.	N.D.	N.D.	N.D.	N.D.	A.O.	N. D.	O.	N. O.	z.o.	N.D.
FEI EMETRY.	- 00000	THE OFFICE /		UFLTR		UFLTR		-		-				_	_									
MAST)		=	>	>	>	>	>	>	>	•	>	>	>	>	>	>	>	>	>	>	>	>	>	>
/ BI : SUD (RICH, MAST) TELEMETRY, MAS; 18		DE ROOF.	81 I IO	UFLIR	UFI, TR	UFLTR	UFI TR	UFLIR	UFLTR	UFLIR	UF1,TR	UF1 18	UFI. IR	UFLIR	UFLTR	UFLIR	UFL 1R	uft. ia	UFLTR	UFLTR	111118	11. 1R	UFI 1R	UTLIR
10.01		1744	150	=	1311	>	1512	31.15	1215	SPARE	SIRSFIS	5115115	S185117	5.85118	\$1183119	S1R5120	5185121	S1Ř5132	SIRSIDA	STR5124	STRS129	SIRSI26	S1R5127	S1R5128

TABLE 2-47

TDRS ANT

OBC TELEMETRY REPORTS

svs-10123A Volume II October 1982

TDRS ANT FOINTING REPORT #1

Minor Frame Number: 19,51,83,115 OBC Telemetry Report Number: 20

Minor Frame word

ENTRY

91	92	93	94	95
0	1	2	3	4
EANA MSB	EANE MSB	ESTS MSB	EABSC MSB	EEBSC MSB

108	109	110	111	112
5	6	7	8	9
ESSBC MSB	THA 2 MS E	ANA		ANE

113	114	115	116	117
10	11	12	13	14
	AZ	TH	E2PANA	
2 MS I	BYTES	2 MS E	BYTES	2 MS BYTES

118	119	120	121	122
15	16	17	18	19
	E2PANE 2 MS BYTES		DASCAN MSB	DESCAN MSB

123	124	125	126	127
20	21	22	23	24
			BYTES	INHPTRK

TDRS ANT POINTING REPORT #2

Minor Frame Number: 20,52,84,116 OBC Telemetry Report Number: 21

Minor Frame word

ENTRY

91	92	93	94	95
0	1	. 2	3	4
NASTEP MSB	NESTEP MSB	ISX	IAD	IED

108	109	110	111	112
5	6	7	8	9
ACPMODE	EXTRN	ADVTRN	INTDRS	CALENA

	113	114	115	116	117
ĺ	10	11	12	13	14
	AUTOSW	IERATR	IRESLV	SPARE	NRACMD MSB

118	119	120	121	122
15	16	17	18	19
NRECMD MSB	NSTCMD 2 MS BYTES		FEANA	FEANE

123	124	125	126	127
20	21	22	23	24
FESTS	LARGE	GANAE MSB	SPARE	ANTADV MSB

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TDRS ANT POINTING REPORT #3

Minor Frame Number: 21,53,85,117 OBC Telemetry Report Number: 22

Minor Frame word

ENTRY

91	92	93	94	95
0	1	2	3	4
EPAE1 2 MS BYTES		₹ EPA	NE2 BYTES	EPAE3 _ 2 MS BYTES

108	109	110	111	112
5	6	7	8	9
	EPAE4 2 MS BYTES		THAC 2 MS	

113	114	115	116	117
10	11	12	13	14
THECMD 2 MS BYTES		BANA 2 MS BYTES		BANE 2 MS BYTES

118	119	120	121	122
15	16	17	18	19
	YANA		YAI 2 MS E	

123	124	125	126	127
20	21	- 22	23	_ 24
OMEGA MSB	SPARE			

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TDRS ANT POINTING REPORT #4

Minor Frame Number: 22,54,86,118 OBC Telemetry Report Number: 23

Minor Frame word

ENTRY .

91	92	93	94	95
0	1	2	3	4
ELBIAS	LAMA1	ĻAMĘ1	LAMS1	LAMA2

108	109	110	111	112
5	6	7	8	9
LAME2	LAMS2	LAMS3	DMAX	DELTA

113	114	115	116	117
10	11	12	13	14
TABO 2 MS E	CMD BYTES	TEBC 2 MS B		STALIM MSB

118	119	120	121	122
15	16	17	18	19
STELIM	SCPENA	GPAE MSB	GIAE MSB	

123	124	125	126	127
20	21	22	23	24

TDRS ANT POINTING REPORT #5

Minor Frame Number: 24,56,88,120 OBC Telemetry Report Number: 44

Minor Frame word **ENTRY**

91	92	93	94	95
0	1	2	3 ·	4
FDCGDEE	FDCGDEA	ECOUNT	ACOUNT	TAZSI

108	109	110	111	112
5	6	7	8	9
	т.	LSI	T A	ZSF
		:L3I	()	

113	114	115	116	117
10	11	12	13	14
TEI	.SF	▼ TA	ZSD ——>	← _TELSD

118	119	120	121	122
15	16	17	18	19
	FDCNTE	FDCNTA	EFPASS	AFPASS

123	124	125	126	127
20	21	22	23	24
APSTAT	FDCAPFT	•	- SPARE-	

TABLE 2-48

TDRS ANT POINTING
OBC TELEMETRY DEFINITIONS

2-265

							O.	. `	,	. 4	···							
PAGE 25		OR SIGNAL	RROR SIGNAL	NGTII	CALIBRAIED ATR AZIMUTH SIGNAL BIAS	CALIBRATED ATR ELEVATION SIGNAL BIAS	CALIBRAIFO ATR SIGNAL STRENGTH BIAS	IMUTH ANGLE	ANGLE	TENNA AZIMUTH	DESIPCO TORS ANTERNA ELEVATION	TORS ANTERNA AZIMUTH TRACKING ERROR	TDRS ANTENNA ELEVATION TRACKING ERROR	TDRS ANTENNA AZIMUTH SCAN RANGE DELTA	TDRS ANIEMMA ELEVATION SCAN RANGE DELTA		ew timer	PROGRAM TRACK HAHIBITOR FLAG. BIT 1: 1/O DISCREIZ TO OFF/DISCREIE TO NORMAL PT. BIT 2: 1/O SLEW TO OFF/SLEW TO
15:24:45	DEFINITION	ATR AZIMUTH ERROR SIGNAL	ATR ELEVATION ERROR SIGNAL	ATR SIGNAL STRENGTH	CALIBRAIED ATR	CALIBRATED ATR	CALIBRAIFD ATR	TORS ANTENNA AZIMUTH ANGLE	TORS ELEVATION ANGLE	DESIRED TORS ANTENNA AZIMUTH	DESIRCO TORS AN	TORS ANTENNA AZ	TORS ANTENNA EL	TDRS ANTENNA AZ	TORS ANIENNA EL	Zenitli niglE	TORS ANIENNA SIEW LIMER	PROGRAM TRACK 1 1/0 015CRE12 10 PT. 811 2: 1/0
29-APR-82	VALUE																	
•	VI 0 5	VOL.1S	VOL 1 S	VOLTS	VOLTS	V01, TS	VOLTS	DEGREE	DEGREE	DEGREE	DEGREE	RADIAN	RADIAN	DEGREE	DEGREE	DEGREE	N.D.	18.D.
	- 5	4	4	4	4	•	•	80	8	•	6 0	ю	n	•	æ	60	11	
05:0	1 EN	S	S	S	v	v	S	S	S	s	S	S	ç	S	S	S	v	72
982 14:	TWARE OF	0000	1000	0005	0003	0004	0002	9000	8000	0010	C012	9014	90 16	00 18	00 19	0050	0022	0024
IS: 18 / 29-APR-1982 14:05:04.03	FLIGHT SOFTWARE DICTIONARY TABLE FRIRY LENGTH SO	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820
15:18	PI PUNITS	VOLTS	VOLTS	VOLTS	VOLTS	VOLTS	VOLTS	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE	DEGREE	DEGREC	N.D.	ж.о.
LFMETRY.	TYPE UPPOC /							ACS	ACS									
^ 11E	1766	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>
INITIE - DRO-[RICH MAST]TELFMETRY, M	DPROC	APCM	APCH	AFCM	AFCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM .	APCM	K APCM
1 Linut	NAME	f AttA	FAME	FSTS	FARSC	FFRSC	rssac	UIAUA	1) IANE	11142	1111	EZPANA	FOUANF	DASCAN	DESCAN	ZENANG	NCSLEW	Traip trak

														0	Rigin F Po		PA QL	IGE IALI	IS TY			0	V	olu	0123A me II 1982
15.24:45 PAGE 26	Ng		TDRS ANTENNA AZIMUTH GIMBAL DRIVE STEP CMD	IDRS ANTERNA ELEVATION GIMBAL DRIVE STEP CMD	Scan axis indicator: • 0, Azimith scan	AZIMUTH SCAN DIRECTION FLAG	ELEVATION SCAN DIRECTION FLAG	TORS ANTENNA POINTING MODE FLAG	Index for selecting the gimbal angles	ADVANCE ANTENNA TURNAROUND FLAG: ENABLED*1	Index for selecting IDRS East or west: • O. IDRS-East • 1, IDRS-West	ATR REFERENCE CALIBRATION FLAG: Enabled*1	AUTOMATIC NODE SWITCHING FLAG: ENABLED"1	INDEX FOR ATR RECEIVER SELECT 1:REDUNDANT(#2) O:PRIME(#1)	RESOLVER INDEX: . O. USF PRIMARY . 1. USE REDUNDANI	···· SPARE ·····	AZIMUTH SLEW RATE CKD	ELEVATION SION FATO CHU	Slew timer	FILTERED AZIMUTH ERROR SIGNAL	FILTERED ELEVATION ERROR SIGNAL	FILTERED SIGNAL STRENGTH ERROR SIGNAL	LARGE SLEW INDICATOR	GAIN COMPENSATION CONSTANT	**** S P A R E **** \042702V16D0
29-400-82	, y	ļ.																							
96.	VALUE														•										
	V1.0-5		STEPS	STEPS	N.D.	N.D.	N.0.	N. O.	N. D.	N.D.	2	S. C.	N.D.	N.D.	N.O.		STEPS	STEPS	STEPS	VOL TS	VOLTS	VOLTS	κ.o.	N.O.	•
5	- 5		,	•		7	7	1	7		~	,	7	•	*	٠	-	7	7	4	4	•	7	- 12	•
90) I C I I		v	v	>	>	>	3	3	>	>	>	3	3	3	•	v	S	v	v	v	s	>	S	1
77 (40)	HI SOFTWARE DICTIONARY		0000	000	000	0003	0004	9000	9000	0000	9C [,])8	6000	00 10	100	2100	0013	9014	900	9100	00 18	00 19	0070	0021	0022	0023
, A D D -	FLIGHT SO		821	821	821	821	821	821	821	821	821	621	821	821	821	821	821	821	821	821	821	821	821	821	821
/ 67 - 540	AAS: 10 / FL DUNIES		STEPS	STEPS	0 2	N.D.	0	N.D.	D	N.D.	O		N.D.	N.D.	O		STEPS	STEPS	STEPS	VOLTS	VOLTS	VOLTS	æ.0.	R 0.	ì
VOT 3115 15 14 15 14	- UBO (KINI) MASI JIELEMEINY MASI WASING - LUBROC / SUMMISS		>		>		>	>	>		>		>	>	٩		>		>		>	>	>	>	-
101010	מפשמנים		AIICM	АРСМ	АРСИ	APCH	APCM	APCM	APCH	АРСИ	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCH	APCM	APCM	APCM	APCM	APCH	APCM	APCH
	NAME		NASIEP	118 518 P	XS1	LAD	031	ACPMODE	EXIRN	ADVIKN	Sadini	CAI ENA	AUTOSW	IEARIR	IRE SI V	SPARE	HRA(MI)	NRECMD	NSTCMD	F t ANA	I E ALIE	1 ES15	1 ARGE	CANAL	SPARE
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OF	POOR	QUALITY

27

PAGE

Antenna edvance engle

DEGREE

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0024

621

DEGREE

AFCM

ANTADV

DEFINITION

VALUE

THI'UT = DITO [RICH, MAST] FELEMETRY, MAS; 18 / 29-APR-1982 14:05 04.03
FLIGHT SOFTWARE DICTIONARY VI.O-5
HAME IPPRIC TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS

29-APR-82 15:24:45

2-268

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ORIGINAL PAGE IS OF POOR QUALITY

JAT SOFTWARE DICTIONARY VI.O.5 TABLE ENTRY LENGTH SCALE UNITS VALUE DEFINITION 822 0000 D 1 N.D. EULER PARMS TO CORRECT FOR ANTENNA ALIGNMENT ERRORS
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FINITION	urnarowed initiation criterion	ogram track to autotrack MODE (ITCHING HIRESHOLDS	TOGRAM TRACK TO AUTOTRACK MODE	ROGRAM TRACK TO AUTOTRACK MODE		O PROGRAM TRACK	TO PROGRAM TRACK	sckup search to autotrack mode .	sckup search maximum scan RADIUS	ickup search scan renge increment	TIMUTH RESOLVER BIAS CMD	evation RESOLVER bias CMD	ix. steps in a control CYCLE	IX STEPS IN A CONTROL CYCLE	MMAND PROCESSING ENABLE	ITE COMPUTATION CONSTANTS	ITE COMPUTATION CONSTANTS	ITE COMPUTATION CONSTANTS	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		··· SPARE ····	(.
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VAI UE											0	0												
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TH SCALE	æ	4	4	•	•	4	₹	.	60	€	æ	c	1	7	۲	, 0	0	9-		,	•	•	•	
LENG	٥	v	S	S	N	S	v	S	٥	٥	v	S	>	Þ	3	٥	٥	٥			•		•	
TWARF () ENTRY	0000	000	0003	0003	0004	9000	9000	0000	8000	6000	00 10	0012	0014	00 15	9100	7100	90 18	90 19	0000	0031	0022	0023	0024	
IABLE	823	R23	823	823	823	823	823	823	823	823	823	023	823	823	823	823	823	823	823	623	823	823	กรล	
4	DEGREE	VOLTS	VOL 15	V0L15	VOL TS	VOL 15	VOL 15	VOLTS	DFGREE	DEGREE	DEGREE	DEGREE	STEPS	STEPS	14.D.	N.D.	N.0.	Z.0.				•	•	
UPROC /	-						=					-						_						
1 Y P.E	>	>	>	>	>	. >	>	>	>	>	۵	c	>	>	>	>	>	>	•	,	1	,		
UPROC	APCM	APCM	AFCM	APCM	APICM .	APCM	APCM	APCM	APCM	APCM	APCM	APCM	AFCM	APCM	АРСМ	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	
NVN	ELRIAS	1 AMA 1	I AMF 1	1.AMS 1	L 11412	I AME 2	1 AMS2	L AMS3	DMAX	DE 1. TA	LARCMD	TERCHO	SIALIM	SIFLIM	SCPENA	GPAF	GIAE	GDAF	SPARE	SPARF	SPARE	SPARF	SUARE	
	FLIGHT SOFTWARF DICTIONARY VI.O.5 UPROC TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS VALUE DEFINITION	FLIGHT SOFTWARE DICTIONARY VI.O.5 UFRUG TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS VALUE DEFINITION AS AFCM V DEGREE 823 0000 D B DEGREE Turnaround initiation criterion	UFRUC TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS VALUE DEFINITION AS AFCM V DEGREE 823 0000 D 8 DEGREE Turnaround initiation criterion 20 1 AFCM V VOLTS 823 0001 S 4 VOLTS SWITCHING HRESHOLDS	OFFIGURE OF TYPE UPROC / DUNITS IABLE ENTRY LENGTH SCALE UNITS VALUE DEFINITION AS APCM V DEGREE 823 0000 D B DEGREE TURNARMING INITIATION CRITERION I APCM V VOLTS 823 0002 S 4 VOLTS SWITCHING THRESHOLDS I APCM V VOLTS 823 0002 S 4 VOLTS SWITCHING THRESHOLDS SWITCHING THRESHOLDS	OFFICE 17 OFFICE 18 OFFICE UFRUC TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS VALUE DEFINITION AS AFCM V DEGREE 823 0000 D B DEGREE TUrnarcound initiation criterion SO TO SO	OF INTRIC FLIGHT SOTWARF DICTIONARY VI.O-5 OF INTRIC DEFINITION OF INTRIC AS APCH V DEGREE 893 0000 D B DEGREE Turnarchird initiation criterion DO 1 APCH V VOLTS 823 0001 S 4 VOLTS SMITCHING THRESHOLDS PROGRAM TRACK TO AUTOTRACK MODE 1 APCH V VOLTS 823 0003 S 4 VOLTS PROGRAM TRACK TO AUTOTRACK MODE PROGRAM TRACK TO AUTOTRACK MODE 2 APCH V VOLTS 823 0004 S 4 VOLTS AUTOTRACK TO PROGRAM TRACK SWITCHING 2 APCM V V VOLTS S 4 VOLTS AUTOTRACK TO PROGRAM TRACK SWITCHING 2 APCM V V VOLTS S 4 VOLTS AUTOTRACK TO PROGRAM TRACK SWITCHING	UPROC TYPE UPROC DUNITS TABLE ENTRY LENGTH SCALE UNITS VALUE DEFINITION DEGREE 1	UPROC TYPE UPROC DUNIS TABLE ENTRY LENGTH SCALE UNITS VALUE DEFINITION A	Virging Virg	Name	Viriuc Viria Vir	Name	Nichold Nich		17 17 17 17 17 17 17 17	17 17 17 17 17 17 17 17	Name	March Marc	Direction Virtuin Vi	1	Difference Type Uniffer Titled State March V Wolls March Wolls March Wolls Name			

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(ORIG OF F	INAL POOR	PAG QUA	E I	3 Y			kent					RED	15	_	CHD:	Jr.F.	
PAGE 53		ELEVATION GDE-FOC ENARLED FLAG (O: DISABLED, 1: ENABLED)	AZIMUTH GDE-FDC ENABLED FLAG (O: Disabled, 1: Enabled)	levation	z imuth	Az Imuth resolver output . Acount=0	Elevation resolver output & Ecount-O	Azimith resolver output & AcountyMaxent	olver output .	TA2SI)	. TELSI)	Failure counter for Elevation (REFERRED TO AS FAILCNTE IN OBC)	Failure counter for Azimuth (REFERRED TO AS FAILCNIA IN OBC)	ist pass flag for Elevation (O: FIRST pass, i: NJT FIRST PASS)	fing for Azimuth (0: FIRST NOT FIRST PASS)	STOP: BIT2: BIT3: SYNI UPERAND IN	FDC SWITCHED APCN TO OFF	B C
15:24:49	DEF 1141 1 10N	ELEVATION GDE DISABLED. 1:	AZIMUTH GDE-FDC ENABL Disabled, 1: Enabled)	Counter for Elevation	Counter for Azimuth	Az Imuth resol	Elevation res	Azimith resol	Elevation resolver output Ecount>Maxcnt	ABS(TA2SF · T	ABS(TELSF " T	Fallure count (REFERRED 10	failure counter for Az TO AS FAILGNIA IN OBC)	ist Pass flag PASS, 1: NOT	ist Pass flag Pass, 1: NOT	BIT1: AZIM AGAINST SOFT ELEV AGAINST SOFF STOP: ERR IN CMD: BIT4: INVAL BIT5: UNDEF REG CODE \03	CLOCK IN WHEN FDC MODE \042782V18DQ	Y & S
29-APR-82	VALUE													0	0			
	ALE UNITS	YES/ND	YES/NO	A	ž Z	DEGREE	DECRFE	DEGREE	DEGREE	DEGREE	DEGREE	COUNTS	COUNTS	YES/NO	YES/NO	S. O.	MSEC	
,	- 73	^		7	7	ō	ō	9	2	õ	0	۲	,	-	-	~	23	•
05:04	FENG	Þ	>	3	3	0	0	c	۵	٥	٥	Þ	>	>	*	>	>	•
1982 14:	ENIRY	0000	000	0005	0003	000	9000	000B	00 10	0012	0014	9100	0011	00 18	6100	0000	0021	0024
8 / 29-APR-1982 14:05:04.03	TLIGHT SOFTWARE DICTIONARY S TABLE ENTRY LENGTH SC	044	8	844	844	844	814	044	844	844	844	844	844	844	844	844	844	844
•	0UNITS	YES/NO	YES/NO	V	N.A.	DEGRFE	DFGREE	DEGREE	DEGRFE	DEGREE	DEGREE	COUNTS	COUNTS	YES/NO	YES/NO	N.O.	SEC	•
I FMETRY.	TYPE UPROC /	-		-			-				-						-	
MAST TE	TYPE	>	>	>	>	>	>	>	>	>	>	>	>	· •	>	>	>	
RO. [R1CH	DFROC	АРСИ	APCM	мьсм	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APCM	APPM
TUPUT * URO, [RICH, MAST]TEL FMETRY, MAS; 1	FJAME	FUCCOTE	CUCGUEA	FCOUNT	AC DIMA	12241	161 51	1255 I	1f 1 Sf	14750	111 50	FDCNIF	FUCNIA	FIPASS	ALPASS	APSTAF	FDCAPF 1	SPARF

TABLE 2-49

SOLAR ARRAY POTENTIOMETER

OBC TELEMETRY REPORTS

SOLAR ARRAY POTENTIOMETER DATA REPORT #1

Minor Frame Number: 00

OBC Telemetry Report Number: 35

Minor Frame word

ENTRY

	т:	SAI1	 XXXXXX		SA12
	0	1	2	3	4
<u> </u>	91	92	93	94	95

	108	109	110	111	112
	5	6	7	8	9
4	xxxxx	SCFLAG MSB	DPUUSE LSB	FDCSADF LSB	SADFAIL LSB

113	114	115	116	117
10	11	12	13	14
FSTIME LSB		RATEBYTES	POTE 2 MS B	

118	119	120	121	122
15	16	17	18	19
TIMI 2 MS I		ISAPI LSB	SADINT LSB	DLYFLG LSB

123	124	125	126	127
20	_ 21	22	23	24
INDEX LSB.		SPA	RE	

(

TABLE 2-50

SOLAR ARRAY POTENTIOMETER

OBC TELEMETRY DEFINITIONS

								14	FULL						<u> </u>								0	cto
	4 2		ROM POT#1	ROM POT#2	BIT2:POI#2 BAD (VISA)	SET O IF SAD	FAILURE	SAD RATE OUT OF			62.144 SEC	SWITCHED POU	. OTHERVISE	EXEC REQUEST	SFND 1X ORBIT	ED POT DATA			01	RIGI P	NAL DOR	PA(QUA	GE LIT	is Y
	PAGE		SOLAR ARRAY ORIENTATION FROM PUT#1	SOLAR ARRAY ORIENTATION FROM POT#2		O:IGNORE DPU, 1:OPU OK SE FAILURE	1:FAILURE DETECTED. 0:NO FAILURE	# OF CONSECUTIVE TIMES SALLIMITS	E 18 POT VALUE AUFFER IS) RATE	DELTA POT RDG OVER LAST 262.144 SEC	CLOCK 18 RDG WIEN SADFDC S	SELECTION 1:USE POT#1, OTHERWISE #2	ION BITS FROM EXEC JPT O BIT2:GRD REQUEST	FDC WAITING TO	10 MOST RECENTLY STURED PDT DATA	A R E	A R E	A R E	A R E				
	15:24.47	DEF INITION	SOLAR ARRAY	SOLAR ARRAY	BIT1:POT#1 BAD	O:IGNORE DPI FAILURE	1:FAILURE DI	# OF CONSECU	I:FIRST TIME	CCMPUTED SAD	DELTA POT RE	CLOCK 18 RDG	POT SELECTIONSE #2	INITIALIZATION BIT1: INTERRUPT	I:WHILE SADFDC RATE CMD	PIR 10 MOST	4 S	S P .	4 S	4 S				
	29-APR-82	VALUE	•			•																		
	V1.0-5	LENGTH SCALE UNITS	DEGREE	DEGREE	N.0.	N.0.	N.D.	z.o.	N. O.	DEG/SE	DEGREE	MSEC	N.D.	ē. 0.	N. 0.	Z. O.		•	•	•				
•		TH SCAL	ຕ	ø	•	٢	7	7	7	-	6	27	7	7	4	,	•	•	•					
	05:04	LENG	S	v	3	3	3	3	3	s	S	v	3	3	3	>			٠					
	982 14: TWARE	ENTRY	0000	0003	9000	0000	8000	6000	00 10	1100	0013	0015	7100	9100	9100	0020	0021	0022	0023	0024				
	/ 29-APR-1902 14:05:04.03 FLIGHT SOFTWARE DICTIONARY	TABLE	932	935	835	835	835	835	838	835	835	835	838	835	835	835	838	835	835	932				
	MAS: 18 /	DUNITS	DEGREE	DEGREE	N O	G N	o O	N.O.	N. D.	DEG/SE	DEGREE	MSEC	N.O.	o v	κ.0.	N. D.	,	•		•				
	EL EME 1RY	TYPE UPROC /				SCP																		-
	4851 JE	IYPE	>	>		>	>	>	>	>	>	>	>	>	>	>	>	>	>	>				
	INVITED THE THE THE PART OF THE PART HAS: 18 /	DPRUC	POIDAT	POIDA	FOIDAT	SAUFDC	SAPILOC	SAUFDC	SADFDC	SAUFOC	SADFDC	SADFUC	SADFDC	SADFDC	SADIDC	SAUFOC	POIDAT	POIDAL	PUIDAL	PUIDAT				
	1100.001	NAME	ISALI	15A12	SCFLAG	DPUUSE	FINCSAUF	SADFAIL	FSIIML	SAURATE	POIDIF	7 IME 18	18481	SA() [14]	01 YF1 G	1 PLOE X	SPARE	SPARE	SPARE	SPARE				
												2-2	275											

TABLE 2-51

EPHEMERIS OBC TELEMETRY REPORTS

SVS-10123A Volume II October 1982

EPHEMERIS COMPUTATION TELEMETRY REPORT #1

Minor Frame Number: 16,48,80,112

OBC Telemetry Report Number: 13

Minor Frame word ENTRY

Data

1	91	92	93	94	95
	0	1	2	3	4
	•	EOGE	BRF(1)		•

108	109	110	111	112		
5	6	7	8	9		
	EOGBRF(2)		EOGBRF(3)			

113	114	115	116	117			
10	11	12	13	14			
		EOGBVF(1)					
			EOGBAL(I)				

118	119	120	121	122				
15	16	18	19					
		FOCB	VF(2)	_				

123	124	125	126	127
20	21	22	23 -	24
	EOGB	VF(3)	-	××× ×××
		•	TUGFLG	ا دن

FUCFLGU
TF is the time of the parameters in the above table

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EPHEMERIS COMPUTATION TELEMETRY REPORT #2

Minor Frame Number: 17,49,81,113

OBC Telemetry Report Number: 14

Minor Frame word ENTRY

Data

91	92	93	94	95				
0	1	2	3	4				
50CP	EOGBRG(1)							
FOCE	KG(I)——							

108	109	110	111	112
5	6	8	9	
	EOGBRG(2)		EOCBI	RG (3)

10 11 12 13 14	. 113	114	115	116	117		
	10	11	12	13	14		
EOGBVG(1)	10	1					

118	119	120	121	122
15	16	17	18	19

123	124	125	126	127
20	21	22	23	24
•	EOGB	VG(3)——-		EPROC

TF is the time of the parameters in the above table

EPHEMERIS COMPUTATION TELEMETRY REPORT #3

Minor Frame Number: 18,50,82,114 OBC Telemetry Report Number: 15

Minor Frame word

ENTRY

Data

1	91	92	93	94	95
	0	1	3 4		
	•	-EOGVCSEC		EOGV	SHER

108	109	110	111	112
5	6	. 7	8	9
	[VARER ——	>	

113	114	115	116	117
10	ii	12	13	14
EOGV	GTER	NEWDAT	NEWDATT	ECLNEW

118	119	120	121	122
15	16	17	18	19
•	EOGVF7D0		EOGV	NFRE

123	124	125	126	127
20	21	- 22	23 -	- 24
	4	- EOGVLOST		SPARE

EPHEMERIS COMPUTATION TELEMETRY REPORT #4

Minor Frame Number: 58

OBC Telemetry Report Number: 16

Minor	Frame	word
	Frame ENTRY	

91	92	93	94	95
0	1	2	3	14
				/T A 1 A 1
	- EOGVFALM		FOC	VTALM

108	109	110	111	112
5	6	7	8	9
		EOC	GWPU	

113	114	115	116	117
10	11	12	13	14
•	EOG	WPG		

118	119	120	121	122
15	16	17	18	19
	EOGWPT -			

3	124	125	126	127
	21	22	23	24

EPHEMERIS COMPUTATION TELEMETRY REPORT #5

Minor Frame Number: 59

OBC Telemetry Report Number: 17

Minor Frame word
ENTRY

91	92	93	94	95
0	1	2	3	4

108	109	110	111	112
5	6	7	8	9
E	OGBPTDE(2)		⊸ EOGBP	PTDE(3)

113	114	115	116	1.17
10	11	12	13	14
<u> </u>			WOGBPT1	

118	119	120	121	122
15	16	17	18	19
		WOGB	PT2 -	

123	124	125	1.26	127
20	21	· 22	- 23	24
	woo	ВРТ3		SPARE

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EPHEMERIS COMPUTATION TELEMFTRY REPORT #6

Minor Frame Number: 18

OBC Telemetry Report Number: 18

Minor	Frame	word
	ENTRY	

0	•			
	· · · · · · · · · · · · · · · · · · ·		2	3 4
		EOGV	VTE3	

108	109	110	111	112
5	6	7	9	9
		EOGWTT3		•

113	114	115	116	117
10	11	12	13	14
10	1 11	12	13	14
4		- EOCMITE		

15 16 17 18	
	19
EOCWTTW	

123	124	125	126	127
20	21	22	23	24
	EOGVNT -		SPA	RE

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EPHEMERIS COMPUTATION TELEMETRY REPORT #7

Minor Frame Number: 61

OBC Telemetry Report Number: 19

Minor Frame word
ENTRY

<u> </u>	91	92	93	94	95
	0	1	2	3	4
F			- EOGWGT1-		

L08	109	110	111	112
5	7	3-7	8	9

113	114	115	116	117
10	11	12	13	14

118	119	120	121	122
15	16	17	18	19
EOGVINIT	•	SPA	\RE	

123	124	125	126	127
20	21	22	23	24
		- **		MXTM

TABLE 2-52

EPHEMERIS OBC TELEMETRY DEFINITIONS

SVS-10123A Volume II October 1982

	ligui • b	BO (RICH	HBULL - DBO (MICH MAST)TELEMETRY	MAS; 18 / 29-APR-1982 (4:05-04 03	29-APR-1	982 :4:	05.04 03	;		29-APR-82 15:24:44	15:24:44 PAGE 18	
-	HAME	11FRUC	TYPE UPRUC /	FL DURINI VS	1641 SOF 1ABI E	THARE D	BH SOFTWARE DICTIONARY VI.O-5 TABLE EHERY LENGTH SCALE UNITS	SCALE UP	~	. ALLUE	DEF IN1110N	
_	EOGSW1 1	FPIEM	>	METERS	813	9000	٥	23 M	METERS		ECI A AXIS COMPOHENT OF FS POSITION COMPUTED USING UPLINKED DATA	S1710M
-	FOCHRE 2	M 311.43	>	METERS	613	9000	٥	23 KI	METERS		ECT Y AXIS COMPONENT OF FS POSITION COMPUTED USING UPLINKED DATA	SITION
_	FOLIBRES	r prift	>	METERS	613	8000	٥	23 M	METERS		CCI Z AXIS COMPONENT OF FS PUSITION COMPUTED US:NG UPLITMED DATA	SITION
-	1 JAIPOLE	M 3H d 3	 >	KM/SEC	813	2100	•	<u>г</u>	KH/SEC		ECI X AXIS COMPONENT OF FS VELÖCITY COMPUTED USING UPLINKED DATA	Locity
-	E OCASVE 2	EPIEN	>	KM/SEC	A 13	9100	۵	8 Z	KH/SEC		ECI Y AXIS COMPONENT OF FS VELOCITY COMPUTED USING UPLINKED DAIA	
.=	E DOMENT 3	KPIEM	>	KM/SEC	813	0020	٥	ž v	KIA/SEC		ECI Z AXIS COUPONENT OF FS VELOCITY COMPUTED HISHIG UPLINKED DATA	100117
-	פיזנינו מו	EPIER	>	æ.0.	8 13	0024	B002	2	٠. ت. ت.		1-INITIALIZED 2-BKGD COEFFS READY 3-FORGROUND COPIED BKGD COEFFICIENTS \032982V1708	READY ICIENTS
2_205	FIKAFICAD	EPHEN	-	₩.0.	8 + 3	9054	6003	2	и. o.		1=INII 2=FORGRD TELLS BGKD USE NEW DATA 3=SET BY BKGD WIEN NEW COEFF COMP BY BKGD 4-SET BY FORGRD WIEN NEW COEFF COMPUTED BY BKGD. \032982V17DB	SE NEW COEFF COMP WEW COEFF B
	100.11.01	W Stild 3	>	2	813	0024	813 0024 B003 2 N.D.	Z	ė.		SAME AS FUGFLGU FOR TORS \032982V17DB	982V 17DB

	METERS 81	814	ENTRY	TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS V METERS 814 0000 0 23 METERS	TABLE ENIRY LENGTH SCALE UNITS B14 0000 D 23 METERS	VALUE	DEFINITION ECI X AXIS COMPONENT OF FS FUSITION	F FS PUSITIO
METERS			000		METERS		COMPUTED USING GPS DATA COMPUTED USING GPS DATA COMPUTED USING GPS DATA	F FS PO
METERS KM/SEC			00008	D 23	METERS KM/SEC		COMPUTED USING GPS DATA COMPUTED USING GPS DATA ECT A AXIS COMPONENT OF FS VELOCITY	F FS POS
KM/SEC			9100		KIM/SEC		ECT Y AXIS COMPONENT OF FS VELOCITY COMPUTED USING GPS DATA	F FS VELO
KM/S	KM/SEC . 814 N.D. 814		0020	n r	N.D.		COMPUTED USING GPS DATA COMPUTED USING GPS DATA BIT1:TORS-W PERMITTED. 0112:TDRS BEDMITTED RIT3:CPS DEDMITTED	A

ORIGINAL PAGE IS OF POOR QUALITY

				origi of P	NAI OOI	L PA	IGE I	S Y				
15:24:45 PAGE 20	DEFINITION	GPS running consecutive checksum error count initialized to 0	SPS ruining conversion error counter Initialized to 0	Running GPS variance error count Initialized to 0	No new GPS time running counter	UCUP SYSTEM TABLE NEW DATA FLAG	TCUP SYSTEM TABLE NEW DATA FLAG	FS NEW DATA FLAG \032482V17DB	Count of GPS data lost because file 7 data not ready initialized to 0	Count of GPS files inst due to buffer not free initialized to 0	Count of rember of times the E.C. module was executed since last good GPS	TDRS NEW DATA FLAG \032482V17DB
29-APR-82	VALUE	•										
V1.0-5	UNITS	ď.	Z.O.	ď.	N.O.	χ. Ö.	N.D.	ā.	۳.0 ۲.0	ž.	Z.	N. O.
	- 7	13	11	1.1	13	۸		-	17	2	11	•
05:00	LER	v	v	v	v	*	*	*	s	v	v	>
29-APR-1982 14:05:04.03	ENTRY	0000	0003	9000	6000	0012	6100	8	5100	8100	0021	0024
/ 29-APR-1982 14:05:04.03	IABLE	8 15	8 15	8 15	8 15	8 15	8 2	815	8 7	8 15	8 15	8 15
	DUNI 15	14.0°.	N.D.	Ö.	N.O.	۲. ق	8.D.	N.D.	N.D.	ā.s	Z.O.	й Э.
'EI EME IRY	TYPE UPROC / DUNITS	EPHEM	EPHEM	EPHEM	EPHEM				EPHEM	EPHEM		
(457)1	IVP	>	>	>	>	>	>	>	>	>	>	>
INPUT = UBO-{RICH MAST]TELEMETRY.MAS:18	DPROC	CCUP	GCUP	GCUP	GCHP	UCUP	1CUP	Maile		L DA	EPHEM	EPHEN
Indui	HAME	fogvese	FOGVSHE	LUGVARE	FOCOGIE	NE WIDA I	PIE WDA 7 1	3	E0GVF 70	EOGVNFR	EUCNI DS	M JNE M

THE PROPERTY OF THE PROPERTY O

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ORI	GINAL	PAGE	ទេ
	POOR		

29-APR-82 15:24:45 PAGE 21	DFFINITION	Residial count exceeded counter for FS uplinked data initialized to 0	TOTAL TORS EPHEMERIDES FIT INTERVAL EXCEEDED COUNTER INITIALIZED TO O	Uplinked FS optionaris normalized time	GPS aphemeris normalized time	TDRS ephemerides norwalized time	***** SPAR ****	***** SPA SP ****	***** SPARE ****	***** M R A G W ****	SO A R E	**** SPAR	**** S P A R E **** EPHZO4
29-API	S VALUE												
t (E UNI 1	Z. Ö.	N. 0.	N.0.	N.0.	N.O.	٠	,		•	•	•	•
:04.03	FLIGHT SUFTWARE DICTIONARY VI.O.5 TAI.LE ENTRY LENGTH SCALE UNITS	11		8	8	8	•	•	•	٠	1	•	•
14:05	2 T	o o	S.	0 9	0 0	0		•	•	<u>-</u>	,		' T
1982	ENI	0000	0003	9000	00 00	8	900	6100	0030	0051	0022	0023	0024
29-APR-	TAI.LE	816	916	916	8 16	816	916	916	8 16	8 16	816	8 16	8 16
.MAS: 18 /	OUNITS	۸.0.	N.0.	N.D.	N.O.	N.D.	•	ı		•		•	
EL CME TRY	TYPE UPROC /	EPHEM	EPHEM										
MAST] T	TYPE	>	>	>	>	>		•		•	•	•	
INPUT . DRO-[RICH.MAST]TELCMETRY.MAS; 18 / 29-APR-1982 14:05:04.03	DPROC	anon	TCUP	EPHEM	EPHEM	EPICEM	FPHEM	EPHEM	E P 1 E M	EPHEM	EPHEM	EPHEM	EPHEM
INPUT . C	NAME	FOGVFAL	EUGVTAL	FUCAPU	FUGWPG	FUGWLT	SPARF	SPARE	SPARE	SPARE	SIVARE	SPARE	SPARE

OR	GINAL	PAGE	IS
OF	POOR	QUALI	TY

- Indra	DBO-{RICH.	MAST)1	TEL EMETRY	14PUT - DBO-{RICH, MAST}TELEMETRY, MAS; 18 / 29-APR-1982 14:05 04.03	29-APR-1	982 14:	05 04.0	03	•	29-APR-82 15:24:45	15:24:45	PAGE	22	
NAME	UPPUC	IYPE	UPROC /	FLIGHT SOFTWARE DICTIONARY VI.O.5 TYPE UPRUC / DUNITS TABLE ENIRY LENGTH SCALE UNITS	FLIGHT SOFTWARE DICTIONARY V1.0-5 TABLE ENTRY LENGTH SCALE UNIT	TWARE D Entry	LENGT	ARY VI.	0-6 UNITS	VALUE	DEFINITION			
FOCHPFI	FPHEM	>	APCM	METERS	817	0000	٥	26	METERS		ECI X AXIS COMPONENT OF TORS-E POSITION	NENT OF 1	DRS-E	POSITION
£003912	EPHEM	>		METERS	817	0004	0	26	METERS		ECI Y AXIS COMPONENT OF TORS-E POSITION	NENT OF 1	ORS-E	POSITION
E068P13	E PHEM	>		METERS	817	3000	c	26	METIERS		ECI Z AXIS COMPONENT OF TORS-E POSIITON	NENT OF 1	ORS-E	POSIITON
MUGBP 1.1	EPHEM	>		METERS	817	2100	٥	26	METERS		ECI X AXIS COMPUNENT OF TDRS-W POSITION	NENT OF 1	DRS-W	POSITION
WOGBP 12	EPHEM	>		METERS	617	9100	٥	26	METERS		ECT Y AXIS COMPONENT OF TDAS-W POSITION	NENT OF 1	M-SEG.	POSITION
VOCARP 13	EPHEM	>	-	METCRS	817	0030	٠ _	26	METERS		ECI Z AXIS COMPONENT OF TDRS-W POSITION	NENT OF 1	DRS-W	POSITION
70402	# 01 F W	•		•	817	- 0024					*** S P A R E **** EPHXOS		PHYOS	

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29-APR-82 15:24:45 PAGE 23 ALUE DEFINITION	Upper time limit for uplinked fS ephemeris interpolator initialized to 0	TDRS interpolator coeffs, upper time limit initialized to 0	TORS East time of current data	TORS West time of current data	UPLINKED FS EPHEMERIS RESIDUAL COUNTER	···· SPARE ····	**** S P A R E **** EPHXO6
29-APR-8 VALUE							
.0.5 UNITS	MSEC	MSEC	MSEC	MSEC	0.N		•
7 29-APR-1982 14:05:04 03 FLIGHT SOFTWARE DICTIONARY VI.O-5 TABLE ENTRY LENGTH SCALE UNI	38	38	38	38	1.1		•
05:04 177110 177110	-	-	-	j	>		
1982 14: Tware D Entry	0000	9000	00 10	00 15	0000	0023	0024
29-APR- (IGHT SOT TABLE	8 18	818	818	818	81 N	818	818
INPUT • DRO.[RICH.MAST]FELFWETRY.WAS;18 / 29-AFR-1982 14:05:04 03 FLEGHT SOFTWARE DICTIONARY VI.O-5 Warif DPROG IVPE UPROG / DUNITS TARLE ENTRY LCHGTH SCALE UNITS	MSEC	MSEC	MSEC	MSEC	N.D.	•	•
JTELCMETRY PE UPROC /					EPHEM		
I, MAST	>	>	>	>	>	•	•
JRO. [RICH DPROG	EPHI M	EPHEM	r Dille M	FPHEM	UCUP	EPHEM	FPI:FM
JANUT = E	FOGWIFS	FOGWITA	EDIGWLIE	FOGWITH	FOGVNI	SPARE	SPARE

			~				RIG F F	:INA 200		PAC QU <i>A</i>		IS TY		
15:24:45 PAGE 24	nef inition	TIME OF CURRENT FIRST GRID POINT FOR GPS INTERPOLATION	Tine of most recent GPS data (GUGWLTU2 for use in E.C.)	Converted GPS time to spacecraft time (NOTE REFERRED AS EDGWIDAT IN OBC)	GPS cooff, update program initialization indicator (1,2,0) initialized to 1	***** SPAR *****	SPAPE	SPARE	**** SPARE ****	**** SPARE ****	SPARE	SPARE	occos CPARE occos	MAX TIME WITHOUT GPS DAYA EXCEEDEC (NOTE REFERRED TO AS EDGUMXIM IN OBC)
29-APR-82	VALUE													
2.0	E UNITS	MSFC	MSEC	MSEC	K, D.	•	•	,	•	,	•	•	,	YES/NO
/ 29-LPR-1980 14 05-(4.03	LENGTH SCALE UNITS	38	37. 27.	38	•	•	•	•	•	•	•	;	•	•
05.	=	-	-	-	3	٠	•	٠	•	•	•	•	•	>
29-6PR-1982 14 05-(4.03	ENIRY	0000	9000	8 5	00 15	9100	0017	8100	6100	0030	0051	0022	0023	0.024
29-LPR-	TABLE	P 19	819	8 6	618	819	8 19	616	8 C.	818	8 19	618	619	8 19
		MSEC	MSEC	MSEC	N.D.	i	•	ı	•			i	•	YES/NO
IEI EMETRY	TYPE UPROC / DUNITS	изназ		EPHEM	EPIEM					-		-		-
L.NAST)	IYPI	>	>	>	>	•	•	•	1	ı	٠	•	•	>
INPUT = DBO:[RICH.MAST] [ELLMETRY.MAS; 18	UPROC	ч	E PHE M	UNDEF	acup	EPHEM	EPHEM	Markey	EPHEM	M31144	M31103	EPHEM	EPHEM	EPHEM
INPUF =	NAME	EUGUGEI	EUSNG12	10A1	EOGVINI	SPARE	SPARE	SPARE	SFARE	SPARE	SPARE	SPARE	SPARE	M X X

TABLE 2-53

SOLAR ARRAY DEPLOY OBC TELEMETRY REPORTS

SOLAR ARRAY DEPLOYMENT TELEMETRY REPORT

Minor Frame Number: 01

OBC Telemetry Report Number: 36

Minor Frame word

ENTRY

Data

91	92	93	94	95
0	1 .	2	3	4
← —SDS	ЕРТМ		SD1	ГЕМР

108	109	110	111	112
5	6	7	8	9
	SCSIDE1	PDSIDE2	ARMLOOP	PDLOOP2

113	114	115	116	117
10	11	12	13	14
DEPLOOP	PDXLOOP	SCCULOOP		

119	120	121	122
16	17	18	19

123	124	125	126	127
20	21	22	23	24

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TABLE 2-54

SOLAR ARRAY DEPLOY OBC TELEMETRY DEFINITIONS

SVS-10123: Volume I: October 198:

		S ME. MEKT	11 11ME. V1GD0	n, 0 •> 10f 8 0m	18 cm, 10E B GM	raing		eploying	Ĩ	\			OR: OF	igin Po	IAL OR	P/s Qu	GE IA	!S			Oct	Vo los
		TIME AT WHICH S/C SEPARATION WAS DETECTED FOR 30D CONSECUTIVE TIME SPARE DELETED VIG. \070202V16D9	TEMPORARY STORAGE FOR SOLARD EXIT THE MEXT SPARE DELETED VIG. \0000787VIGDO	Indicates which side SC/CU is on, SC/CU SIDE A On , I -> SC/CU SIDE	Indicates which side of the PDU is 0 -> PDU SIDE A CH, 1 -> PDU SIDE	f of unsuccessful attempts at arming the deploy circuitry and pyros	s of unsuccessful attempts at configuring the PDU	s of unsuccessful attempts at deploying the SA panel	of attempts at reconfiguring (HERRER OF UNINCESSFUL ATTEMPTS CORT IG THE SCCU \0002482V1708	···· SPARE ····	····· SPARE ·····	···· SPAR ····	SPARE	SPAR	A SPARE	SPARE	# # # # # # # # # # # # # # # # # # #	SPARE	SPARE	SPARE	*****
	30 14				·																	
V1 0-5	(BALTS	MSEC	NSEC.	VE 5/140	1/E S/140	If.D.	М.D.	₩.D.	M.D.	W.D.		•	•		•	•			•			
ARY VI	LENGTH SCALE UNITS	27	31	,	•			•		•	•		•			•			•	•	•	,
91CT 10W		•	v	>	3	>	>	Þ	æ	>			•		•	•	•	•		•	•	•
TAVAL	ENTRY	0000	6003	9000	6007	9000	6000	600	<u>8</u>	2100	613	8	2100	80 16	7100	8	6100	0020	1 200	0022	0023	7000
FLICATE SOFTWARE DICTIONARY	7 A B L E	836	928	836	936	836	836	836	912	836	836	928	836	836	928	836	836	836	836	9 36	836	9.0
	501115	MSEC	MSEC	YES/HD	YES/110	N.O.	K.D.	11.D.	11.D.	и.б.			•	•		,				•	•	
, , , , , , , , , , , , , , , , , , , ,	TYPE UPROC /														-							-
31 1 C	1406	>	>	>	>	>	>	>	>	>	•		•	•				,				,
TOTAL AND THE COMMEND OF THE PROPERTY OF THE P	20840	SOIFCE	SOF APD	SOLARD	501 APU	04 i05	SULARD	201480	7.01 APD	701 APD	CAY ILS	SOI APP	SOI APD	501.AR0	SOLAPD	SOI APO	COLARD	7.01 APD	SUL ARD	SOLARD	SOIL ARD	CON A DE
	112.31	SUSEPEN	'4) 1 f MD	56510 F1	6051012	APWI, DOF	F111 (XI)F2	DEPLOAP	F13 v1 (XVIP	300 moos	Srapf	Strauf	SPANE	SPARF	SFARF	SFAPF	Strapt	SUADE	',PARE	SPAPE	SPARE	2010

TABLE 2-55

TLM MONITOR OBC TELEMETRY REPORTS

TELEMETRY MONITOR REPORT #1

SVS-10123A Volume II October 1982

Minor Frame Number: 47

OBC Telemetry Report Number: 47

Minor Frame word

ENTRY

91	92	93	94	95
0	1	2	3	4
TMSTAT 01	TMSTAT 02			

8	109	110	111	112
	6	7	8	9

	 	1		
10	11] 12	13	14

118	119	120	121	122
15	16	17	18 -	19

123	124	125	126	127
20	21	22	23	24
			TMSTAT 20	TMSTAT 25
			, m > 1 A 1 2 4	I ms t At 25

TELEMETRY MONITOR REPORT #2

SVS-10123A Volume II October 1982

Minor Frame Number: 48

OBC Telemetry Report Number: 48

Minor Frame word

ENTRY

91	92	93	94	95
0	1	2	3	4
TMSTAT 26				

	109	110	111	112
$\neg \neg$	5	7	R	9

114	115	116	11:
 11	17	13	12

L18	119	120	121	1.22
15	16	17	18	19

123	124	125	126	127
20	21	22	. 23	24

TELEMETRY MONITOR REPORT #3

SVS-10123A Volume II October 1982

Minor Frame Number: 49

OBC Telemetry Report Number: 49

Minor	Frame	word
	FNTRY	

91	92	93	94	95
0	1	2	3	4
TMSTAT 51		****		

109	110	111	112
6	7	8	Q

.3	114	115	116	117
^	11	12	13	12

18	119	120	121	122
15	16	17	18	19

123	124	125	126	127	
20	· 21	. 22 .	23	24	
				TMSTAT	75

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TABLE 2-56 TELEMETRY MONITOR TELEMETRY

The telemetry monitor telemetry report contains the status words for the telemetry groups that are being monitored. Each group has one 8 bit status word associated with it. 75 total status words make up 3 reports. The reports are output once per major frame.

Let TMSTAT I J denote the status word for the IJ'th group. The contents of the status word are defined as follows:

Bits 1 - 2	Number of times the group checked out of limits
Bit 3 = 1 = 0	Group out of limits Group in limits
Bit 4 = 1 = 0	Inhibited from sending commands Enabled for sending commands
bit 5 = 1 = 0	Inhibited from limit checking Enabled for limit checking
Bit 6	Undefined
Bit 7 = 1	Error in Group
Bit 8 = 1	Number of Groups Exceeded

		z á	r LOAD)					•	0	RIG	INA POC	L I	PAG QUP	E I	S Y							0	V cto	olu	me]
PAGE 56		TIMES CHECKED OUT OF ITOUT OF INDICEMBLED COMMAND OFFINBLED	O*ENABLED. UNDEFINED. . BITB:NIMBER OF	STAT2	TMSTAT2 .	TMSTAT2	TMSTAT2	THSTAT2	TMSTAT2	TMSTAT2	TMSTAT2	TMSTAT2	TMSTAT2	TMSTAT2	TMSTA12	TMSTAT2	TMSTAT2	TMSTAT2	TMSTAT2	TMSTAT2	THSTA12	TMSTA12	TMSTAT2	TMSTAT2	TMSTAT2
15:24:49 P.	DEFINITION	BITS 162:# OF TIMES CHECKED OUT OF LIMITS. BIT3: 1*DUT OF LIMITS, 0*IN LIMITS, BIT4:SEND COMMAND O*ENABLED 1*INMIBITED.	BIT5:LIMIT CHECKING O*ENABLED. 1=IMMIBITED. BIT6: UNDEFINED. BIT7:ERROR IN GROUP. BIT8:NUMBER OF GROUPS EXCEEDED (788-SYSTEM TABLE LOAD)	REFER TO THSTAT1 & THSTAT2	REFER TO TMSTATI & TM	REFER TO INSTATI & IM	REFER TO THSTATI & TH	REFER TO THSTAT! & TH	REFER TO TMSTATI & TM	REFER TO INSTATI & TH	REFER TO THSTATI & THY	REFER TO THSTATI & TH	REFER TO THSTATS & THE	REFER TO TMSTATI & TW	REFER TO THSTAT! & TH	REFER TO THSTATI & THE	REFER TO TMSTATI & TMS	REFER TO THSTATI & THE	REFER TO TMSTAT1 & THS	REFER TO THSTATI & THS	REFER TO THSTAT! B TH:	REFER TO IMSTATI & TMS	REFER TO TWSTAT! & THS	REFER TO INSTAT! & TM!	REFER TO TMSTAT1 & TM
29-APR-82	VALUE																								
4. 0	LE UNITS	Ö.	c. ž	N.D.	N.D.	N.D.	N.D.	N.D.	N.0.	N.D.	N.D.	Ö.	N.D.	N.D.	N.D.	N.0.	N.D.	Q	N.D.						
	5	۴	7	7	7	7	7	4	7	7	7	7	7	1	7	1	7	7	7	7	7	7	•	7	7
:05:	ב ב	>	>	>	3	3	>	>	3	3	>	>	3	3	>	>:	3	3	>	>	3	3	>	>	3
1982 14	ENTRY	0000	000	0007	0003	9000	0002	9000	000	8000	6000	00 10	8	0012	0013	9014	00 15	30 O	7100	8100	6100	0050	0051	0022	0023
/ 29-APR-1982 14:05:04.03	TABLE	847	847	847	847	847	847	847	847	847	847	847	847	847	847	947	847	847	647	847	847	847	847	847	847
	DUNI 15	.0. .0.	o. Z	Z.O.	O.	ĸ.o.	Х. О.	Z.	N.0.	Z.D.	N.D.	N.O.	N.D.	N.O.	N.D.	a Z	N.Ď.	N. O.	N.O.	O	N.O.	o z	c. C.	N.D.	Q
TELEMETRY	TYPE UPROC /	UNI S																							
I. MAST	TVP	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>∙	>	. >	>	>	>	>	>	>	>
INPUT + DBO-{RICH.MAST}TELEMETRY.MAS;18	DPRUC	NOMI	NOM I	NOWI	NOME	THON	NOMI	NOMI	TMON	NOMI	IMORI	TMOM	1 MON	NOMI	NOMI	NOMI	í Hön	NOMI	THOM	NOMI	TMON	1 MOR4	NOMI	NOM	PIOMI
. LOGNI	NAME	IMSTAFI	IMSTAT2	TMSTATE	1M51A14	IMSIA15	IMSIA16	IMSIA17	IMSIA 18	1MSTA19	1MS1A10	IMSTAII	1MS1A12	IMSTA 13	IMSTAIN	IMŞ I A 15	imsiai6	IMSIA17	1MS1A18	IMSTA 19	1M51A20	IMSTA21	1MS 1A22	IMSTA23	IMS1A24

PAGE		
15:24:49	DEF INITION	
29-AFP 82 15:24:49	VALUE	
	SCALE UNITS	2
14:05:04 03	RY LENGTH	847 000 1
19-APR- 1982	TABLE ENT	847
.MAS: 18 / 2	DUNITS	2
AST)TELEMETRY	NAME DPROC IYPE UPROC / DUNITS TABLE ENIRY LENGTH SCALE UNITS V	>
URO: [RICH.M	UPROC	NOMI
INFUT =	NAME	1MSTA25

57

• JUANI	DBO-(RICII.	MAST }	INPUT . DBO:[RICH.MAST]TELEMETRY.MAS:18	MAS: 18 / 2	/ 29-APR-1982 14·05:04.03	982 14	05:04.0		ų (29-APR-82	15:24:49	PAGE 58
NAME	UPROC	TYPE	E UPROC /	DUNITS	TABLE	ENTRY	LENGT	- 5	VI.0-5	VALUE	DEFINITION	
1MS (A26	NO M I	>	UNIS	N.D.	848	0000	>	7	N.0.		REFER TO THISTATE &	TMSTAT2
IMS1A27	1 NON	>		N.D.	848	1000	>	7	N.D.		REFER TO TMSTATI &	THSTAT2
1MS1A28	1 HON	>		o.	848	0000	>	_	N.0.		REFER TO THISTATE &	TMSTAT2
IMSTA29	TMON	>		N.O.	848	0000	>	7	Z .D .		REFER TO TMSTAT1 &	TMSTAT2
IMSTA30	NOMI	>		N.D.	848	0004	>	7	N.D.		REFER TO TASTATE 8	THSTAT2
IMSTADI	TMON	>		N.D.	848	9000	>	1	N.D.		REFER TO THSTATI &	TMSTAT2
TMSTA32	1 MON	>		N.O.	848	9000	Þ	7	N.O.		REFER TO IMSTAT! &	TNSTAT2
THS FA33	TMON	>		N. D.	848	0000	3	7	N.D.		REFER TO THSTATI &	THSTAT2
TMS1A34	IKON	>		Z.O.	848	8000	>	7	N.O.		REFER TO THSTATE &	TMSTAT2
1MS I A 35	THON	>		N.0.	848	. 6000	>	7	ν. Ο.		REFER TO THSTATI &	TMSTAT2
FMSTA36	NOMI	>		N.O.	848	00 00	3	7	N.D.		REFER TO THSTAT1 &	THSTAT2
1MS1A37	IMON	>		N.D.	848	5	>	7	N.Ö.		REFER TO THISTATI &	THSTAT2
1MSTA38	THON	>		N.D.	848	0012	>	7	N.D.		REFER TO TMSTATI &	TMSTAT2
TMS1A39	NUMI	>		N.D.	848	0013	>	7	N.D.		REFER TO TMSTAT! 8	TMSTAT2
1MS1A40	NOMI	>		N.D.	848	0014	>	1	Z.Ö.		REFER TO THSTAT! 8	TMSTAT2
IMSIA41	IMON	>		N.D.	848	2100	>	7	N.D.		REFER TO TMSTATE &	THSTAT2
IMSIA42	NUMI	>		N O.	848	9000	>	1	N. D.		REFER TO INSTATI &	TMSTAT2
TMSTA43	THON	>		N.D.	848	1100	>	7	Z. D.		REFER TO THSTAT! &	TMSTAT2
1M51A44	NOMI	>		N.D.	848	8100	>	7	₩.D.		REFER TO TMSTATI &	THSTAT2
1MSTA45	NOMI	>		N.D.	848	6100	3	7	c z		REFER TO INSTAT! &	TNSTAT2
TMSTA46	NUWI	>		N.D.	848	0000	3	7	N.D.		REFER TO TMSTATE &	TMSTAT2
1MSTA47	MOM	>		N D.	848	0021	>	7	N.D.		REFER TO THSTAT! 8	TMSTAT2
IMSTA48	NOWI	>		N.D.	848	0022	3	7	N.D.		REFER TO THSTAT1 &	TMSTAT2
1MS1A49	1 14014	>		N.D.	848	0023	>	2	Z.0.		REFER TO INSTAT! &	TMSTAT2
IMSTASO	NOMI	>		¥.0.	848	0024	3	•	Z.0.		REFER TO TMSTAT! &	TMSTAT2

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/ `_ 59 TMSTAT2 CO THISTATE & THISTATE TO IMSTATE & TMS:AT2 REFER TO IMSTAT! 8 TMSTAT2 TMSTAT2 REFER TO IMSTAT! & IMSTAT2 REFER TO INSTATE & IMSTAT2 REFER TO THSTATE & THSTATZ THSTAT2 TO IMSTATE & IMSTAT2 TO IMSTAT! & IMSTAT2 REFER TO INSTAT! 6 INSTAT? REFER TO TMSTAT! & TMSTAT2 REFER TO IMSTATE & TMSTAT2 REFER TO IMSTAT! & IMSTAT2 REFER TO THISTAT! 8 THISTATE REFER TO IMSTATE & INSTATE REFER TO IMSTATI & IMSTAT2 REFER TO THISTATE & THISTATE **IMSTAT2** TMSTATZ THSTAT2 PAGE REFER TO TMSTATE 8 REFER TO INSTAT! & REFER TO THISTATI & REFER TO THSTAT! & REFER TO TMSTAT! 8 REFER TO TMSTATI & TO THISTATI & TO THSTATE & TO THSTAT! 8 DEFINITION 15:24:49 REFER REFER HEFER REFER REFER 29-APR-82 VALUE INPUT - URO: (RICH MAST)TELEMETRY MAS; 18 / 29-APR-1982 14:05-04.03
FLIGHT SUFTWARE DICTIONARY VI.O-8
NAME UPROC TYPE UPROC / DUNITS TABLE ENTRY LENGTH SCALE UNITS . .o.z N.D. o Z S S N.D. N.D. o. N.O. 0.N 0 N.D. . 0 N.O. N.O. S.O. N.0. N.0. .o. ⊆ N.O. N.O. o. o. o z 2100 00 8018 8 000 0000 0003 0005 9000 000 8000 000 0100 100 8014 8015 90 16 8017 6100 0000 0021 0022 0023 0024 9000 349 849 849 849 649 649 849 849 849 ¥ 0. S.O. N.O. Z.0 , 2 S.O. NO. N.O. O Z Z . N.D. ت . N.O. N 0 8.0 .0 N.D. S. . . N.D. 2.0 Z. ď. N.C. CINIS NOM HMIN TMON MOM 1 MON 1 MON TMUN IMON NOMI TMON 1 MON MOM MOM I MON TMON IMON IMON NOWI 1 MON TMON WOM: TMONT I MUN THSTARB IMS1A55 INSTA58 IMSTA59 IMS TAGO 1 MS 1 AG 1 IMSTA63 1MSTA65 1MS1A66 IMSTAGA IMSTA70 IMSTA71 1M51A72 1MS1A73 IMSTA56 INSTA57 1MS1A64 1MS 1A67 IMS1A74 1MS1A75 IMSTA51 IMSTA52 IMSTA53 TMS TAS4 1MS1AG2

TABLE 2-57

FLIGHT EXECUTIVE OBC TELEMETRY REPORT

FLIGHT EXECUTIVE TELEMETRY REPORT

SVS-10123A Volume II October 1982

Minor Frame Number: 07,39, 71,103 OBC Telemetry Report Number: 39

Minor Frame word

ENTRY

91	92	93	94	95
0	1	2	3	4
FLTEX 01	FLTEX 02			*****

109	110	111	112
6	7	8	9

13	114	115	116	117
10	11	12	13	14

118	119	120	121	122
15	16	17	18	19
FLTEX 16	XX \$ = 130 -129		CKS	UM

1.23	124	125	126	127
20	21	22	23	24
	RTS	CMDS	CMD	INH

TABLE 2-58

FLIGHT EXECUTIVE TELEMETRY REPORT DEFINITIONS

<u>BITS 0-63 (Word 1-8)</u> - 64 bits which indicate different situations and events within the executive which need prompt attention by the ground. MMS on board computer flight executive technical description (S-700-56 Rev B) Appendix D explains this field.

<u>BITS 64-127 (Word 9-16)</u> - Processor status, using two bits for each processor. The first bit is 1 if the processor is inhibited from sending commands, the second bit is 1 if the processor is inhibited from execution. The processors are arranged in numerical order, beginning with bits 64 and 65 for processor number 1.

BITS 129 and 130 - Have special meaning

<u>BIT 129</u> - If 1, too many commands for the processor command storage area. Commands ignored.

BIT 130 - If 1, Critical processor inhibited

											GINAI POOI							Vo	-10123A lume II er 1982
15:24:48 PAGF 47	DETINITION	STATUS WHICH REQUIRES PROMPT ATTENTION - FLIEX OI	STATUS WIICH REQUIRES PROMPT ATTENTION - FLIEX 02	STATUS WHICH REQUIRES PROMPT ATTENTION - FLIFX 03	STATUS WIICK REQUIRES PROMPT ATTENTION - FLTEX 04	STATUS WHICH REQUIRES PROMPT ATTENTION . FLTEX 05	STATUS MIICH REGUIRES PROMPT ATTENTION - FLIEX 06	STATUS WHICH REQUIRES PROMPT ATTENTION - FLTEX 07	STATUS WHICH REQUIRES PROMPT ATTENTION - FLIEX 08	CURRENT STATUS OF PROC 1-4 - FLIEX 09	CURRENT STATUS OF PROC 9-8 - FLIEX 10	CURRENT STATUS OF PROC 9-12 - FLIEX 11 \042782V16DQ	CURRENT STATUS OF PROC 13-16 - FLIEX 12 \042782V16D0	CURRENT STATUS OF PROC 17-20 - FLIEX 13	CURRENT STATUS OF PROC 21-24 - FLIEX 14	CURRENT STATUS OF PROC 25-28 - FLTEX 15	CURRENT STATUS OF PROC 29-32 - FLIFX 18	BIT 129 - SOFTWARE STORED CORMAND ERROR. BIT 130 - CRITICAL PROCESSOR WAS INNIBITTED	S P R R
29-APR-82	VALUE																		
	TE UNITS	N. D.	N.D.	N. O.	N.D.	N.D.	N. D.	N.D.	O Z	N.D.	N.D.	N.D.	Ö.	N.D.	N.D.	N.0.	Z. O. Z		•
	5	7	7	r-	7		1	•		•	•	7			,	•	•	-	·
05:04	LENGI	>	>	>	>	>	>	>	>	>	>	>	>	>	>	*	>	>	•
982 14	ENTRY	0000	1000	0005	0003	000	9000	9000	0000	8000	6000	00 10	-	2100	0013	0014	8100	9100	0017
29-APR-1	TABLE	. 603	839	839	839	839	839	839	839	839	629	623	839	839	839	839	838	839	838
MAS: 18 /	DUNITS	х .о.	N.D.	й. О.	N. D.	х О.	N. O.	N.O.	N. D.	N.D.	N. D.	N.D.	N.D.	N. D.	N.D.	O	N.D.	N.O.	•
INFIIT " DRO; [RICH, MAST] TELEMETRY, MAS; 18 / 29-APR-1982 14:05:04 03	TYPE UPROC /	>	>	>	>	, .	>	>	>	>	>	>	>	>	>	>	>	>	
PRO: [RICH. M	DPROC	ri texec	FLIFXEC	FLIEXEC	FLIEXEC	rliexec	FILTEXEC	FLIFXEC	FLTEXEC	FLIEXEC	FLTEXEC	FLTEXEC	FLTEXEC	FLTEXEC	FLTEXEC	FLIEXFC	ורונאנכ	FLICXEC	FLTEXEC
INFUT " D	PIAME	ılıExoı	rl.1Ex02	F1 1Ex03	FI, TEXOA	FLIEXOS	FI IEXOG	rL1Ex07	FLIEXOB	r. j. x09	FLIEX10	FLIEXII	rLrex12	FLFEX13	FL TEX 14	F1 1EX 15	FI.1FX16	FLIEX17	SPARE
										2-3	08	•							

PAGE 48		OSC COMPUTED CIECKSUM \042782VIBDQ	MUSSER OF WORDS REMAINING FOR RTS ALLOCATION \042782V18DQ	MSS-INI #0 : LSB-1MI # 15. 1-INHBITED.
15:24:48	DEFINITION	OSC COMPUTED CH	MUSEER OF WORDS REMAINING ALLOCATION \042782V18DQ	MSB*INI #0 : LS
29-APR-82 15:24:48	VALUE	•		
1	UNITS	N.D.	M.D.	N.D.
04.03	FLIGH SUPER DICHERARY VI.O.5	17 N.D.	15 M.D.	is N.D.
95:50		>	>	>
982 14	ENIS	9100	7 1 200	0023
29-APR-	LICAN SOF	629	839	639
, MAS; 10 /	ST IMPO		N D.	3 _
EL EME IRY	TYPE UPROC /			
AST] [TYPE	>	>	>
118'11 - 1180. [RICH MAST]TELEMETRY. MAS; 18 / 29' APR-1982 14.05:04.03	UPROC	FLIEFEC	FI IEXEC	FITEREC
Dani . f.	HAMP	CKSID	RISCHUS	CMD1rB1

 (\bar{x}_{i})

TABLE 2-59

de une de pour de la company de la company de la company de la company de la company de la company de la compa

GMT UPDATE OBC TELEMETRY REPORT

GMT UPDATE REPORT

SVS-10123A Volume II October 1982

Minor Frame Number: 97

OBC Telemetry Report Number: 37

Minor Frame word

ENTRY

ı	91	92	93	94	95
	0	1	2	3	4
	GMTSTAT	MNSTRT	 ⊤DF	PUCUR	

108	109	110	111	112
5	6	7	8	9
······································		 		h

113	114	115	116	44
10	. 11	12	13	1 1

119	120	121	122
16	17	18	19
	SPARE		
			16 17 18

123	124	125	126	127
20	21	22	23	24
		SPARE		
		SPARE		

TABLE 2 - 60

GMT UPDATE TELEMETRY DEFINITIONS

PAGE 44		GMICOR STATUS FLAG 1 => AVAITING MINDR FRANE # 8 2 => DPU TIME UPDATE COMPLETE 3 => ABORTED TIME UPCATE (BAD T)	MINDR FRAME COUNT AT STAYT OF CMTCOR EXECUTION \032482V1708	CURRENT DPU TIME (EQUALS IDPU)	Updated DPU time \031182V17RS	•	••••		£	• • • • •	OF OF	R!GI PO	NAI DOR	P. Qi	AGI	E IS
15:24:48	DEF INITION	GMTCOR STATUS I FRAME # 8 2 "> 3 "> ABORTED TI	MINDR FRAME COUNT AT ST EXECUTION \032482V170B	CURRENT DPU TIS \032482V17DB	Updated DPU tie	SPAR	S P A R	SPAR	SPAR	S P A R	S P A R	S'P A R	SPAR	SPAR	**************************************	SPAR
29-APR-82	VALUE															
u C	UNITS	х. О.	۶. ت.	HSEC	MSEC	•				•						
4.03	TELEGIE SUFFERE DICTIONARY VI.O.3 TABLE ENIRY LENGTH SCALE UNITS		,	38	38	•	1	,	•	,	•	•	•	•		•
0:50:	3 X 3 7	>	3	-	-	•		•	•	•	•	•	•	•	•	
1982 14	ENIRY	0000	1000	0000	8000	8	00 15	90 16	0017	8100	0019	0030	0051	0022	0023	0024
/ 29.APR 1982 14:05:04.03	TABLE	837	637	837	837	637	637	1:3	837	837	837	837	837	837	108	837
- MAS; 18 /	OUNTS			MSEC	MSEC	•	_ '_	_ • _	_ ' _	. • _	• _	_ •_	_•	3	•-	- <u>*</u>
MEUT . DBO. RICH. MAST JELEMETRY MAS; 18	TYPE UPROC /		>	>	>	,	•	•	•	•	•	•	•	,		•
жо. (втси.	DPROC	CMICOR	CMICOR	GMICOR	CMICOR	CMICOR	GMTCOR	CHICOR	GMICOR	GMTCUR	GMTCOR	CMICOR	GMTCOR	GMICOR	CMICUR	CMICOR
o - Indal	PIAME	CHISTAL	MANES TRE	IDPUCUR	TUPDALE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SFARE	SPARE

TABLE 2-61

MEMORY MONITOR OBC TELEMETRY REPORT

SVS-10123/ Volume I) October 198/

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MEMORY MONITOR REPORT #1

Minor Frame Number: 65

OBC Telemetry Report Number: 40

Minor Frame word ENTRY

91	92	93	94	95
0	1	2	3	4
XX 18 1	3 X X 12	SPARE		
М	EMORY WORL) 1	SPARE	

108	109	110	111	112
5	6	7	8	9
MEMORY	WORD 2	SPARE	MEMORY	WORD 3

113	114	115	116	117
10	- 11	12	13	14
*	SPARE	MEMORY	WORD 4	

118	119	120	121	122
15	16	17	18	19
SPARE	⊸	MORY WORD	5	SPARE

123	124	125	126	127
20	21 .	22	23	24
٨	_ MEMORY WORD	6	SPARE	SPARE NOT USEABLE

MEMORY MONITOR REPORT #2

Minor Frame Number: 66

OBC Telemetry Report Number: 41

Minor Frame word ENTRY

91	92	93	94	95
0	1	2	3	4
XX18 → 13	3 XX12—→ 7	SPARE	4	
м	EMORY WOR	D 7	SPARE	

108	109	110	111	112
5	6	7	8	3
MEMORY	WORD 8	SPARE	MEMORY	WORD 9

113	114	115	116	117
10	. 11	12	13	14
6	SPARE	ME	WORY WORD	10

118	119	120	121	122
- 15	16	17	18	19
SPARE	ME	MORY WORD	11	SPARE

123	124	125	126	127
20	- 21	22	23	24
ME	MORY WORD	12	SPARE	SPARE NOT USEABLE

MEMORY MONITOR REPORT #3

Minor Frame Number: 67

OBC Telemetry Report Number: 42

Minor Frame word ENTRY

91	92	93	94	95
0	1	2	3	4
XX18 13	XX12 -> 7	××6 ——➤	SPARE	
м	EMORY WORD	13	J. AKE	<u></u>

108	109	110	111	112
5	6	7_	8	9
MEMORY	WORD 14-→	SPARE	MEMORY	WORD 15

113	114	115	116	117
10	11	12	13	14
	SPARE	⊸ ME	MORY WORD	16

118	119	120	121	122
15	16	17	18	19
SPARE	→ ME	MORY WORD	17	SPARE

123	124	125	126	127
20	· 21	22	2.3	24
	MEMORY	WORD 18	SPARE	SPARE NOT USEABLE

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TABLE 2-62

MEMORY MONITOR TLM DEFINITIONS

The three (3) Memory Monitor TLM Reports contain a maximum of 18 memory words who's addresses are found in System Table 15, QMONADDS. The first word of Table 15 contains the address of the memory location who's contents will be put in memory word 1 of Memory Monitor Report #1. The System Table contains 17 more addresses to specify location of the other 17 available words in the TLM Report. These are formated as shown in word 1 thru 4 or Report 1 with 18 bits of memory contents packed into words 1-3 followed by a fourth word with zero field. The two most significant bits of each of the first three words are fill bits.

					OKIO OF	GIN. PO	AL OR	PA QU	GE AL	IS IS				ABLE)
49														NOT US
PAGE			:		:		:		:		:		:	:::
15:24:48	DEFINITION	CMCMADDS(1)	SPARE	OMOHADOS (2)	· SPARE ·	CACHADOS (3)	· · · · SPARE ·	CHOMADOS (4)	SPARE .	OMCONADOS(S)	· SPARE ·	OHOWADDS(8)	· SPARE ·	**** S P A R E **** (NOT USABLE)
29-APR-82 15:24:48	VALUE		÷											
	.0-5 UNITS	N.D.		N.D.	•	N.D.	•	7.D.	•	N. D.	,	N.D.	•	
<u> </u>	SCALE	11	•	11	•	11	•	11	,	11		11	•	٠
05:04.0	LENGTH	æ	•	x	•	×	•	×	•	I		n		
982 14:(HI SOFIWARE DICTIONARY: V1.0-5 TABLE FHIRY LENGTH SCALF UNITS	0000	0000	4000	000	8000	1100	2100	5100	9100	6100	0000	0023	0024
18 / 29-APR-1982 14:05:04.03	FLIGHT SOFTWARE DICTIONARY: V1.0-5 TABLE FRIRY LENGTH SCALF UNIT	840	840	940	840	940	840	940	840	840	840	840	840	840
Œ.	ouni 1 s	N.D.		M.D.	•	N.O.		¥.0.		N.D.		N.D.		
10001 - DED (RICH MASI)TELEMETRY MAS;	TYPE UFRUC /	>	•	>	•	>	•	>	•	>	•	>		•
tino - (#10) +	DAROC	FLIFXEC	FITEXEC	FLIEVEG	FLIEXEC	ורונאנכ	r rexec	FLIEXFC	FITEXEC	FLIFXFC	FLIFAEC	rt texec	FLIEXFC	FLIEXEC
- 10.001	HVMF	E Fina	40V.L	CIERT III	SPARE	LINAM 3'H	SFARE	MI MW14	SUARE	MT MM115	SPARF	Mf WAILS	SPARF	SPARE

ţ

į

11.00	BO FRICH	INDUI - 1180 [KICH MASI] IELEWEIRY, MAS; 18 / 29-4PR-1982 94.05:04 03	HAS: 18 / 2	9-4PR-19	82 14.0	5:04 03	(29-APR-82 (5:24.48	15:24.48	PAGE	20
NAME	DFROC	TYPE UPRUC /	7 DIMITS	1 ABI E	ENTRY	LENGTH SC	TABLE ENTRY LENGTH SCALE UNITS	VALUE	DEFINITION		
P.E MMM 7	FIIFXEC	>	N.D.	941	0000		N.D.	•	QMDNADDS(7)		
SPARE	FLIEXEC			841	0000	•	,		SPARE	:	
ME MMR18	FI TEXEC	>	N.D.	941	9000	н 17	N.D.		CHONADDS (B)		
SPARE	FI TEXEC	•	•	148	0001	•	•		SPARE	• • • • • • • • • • • • • • • • • • • •	
613KH 3M	FI TEXEC	>	N.D.	94.1	8000	71	 .0.		OMONADDS(9)		-
SPARE	FLTEXEC	•	•	841	100	•	,		SPARE	:	
OI FACH 3M	FLIEXEC	>	N.D.	84.1	0012	K 17	R.O.		QKDNADDS (10)		
SPARE	FIFFE	•	•	841	8100	•		•	SPARE	:	
ME MAN I B	fi texec	>	N.D.	845	90 16	17	Ğ.		QMOMADDS (11)		
SPARE	FLIEXEC	ı		841	6100	•	,		SPARE		
ME MMU 12	FLIEXEG	>	Z.Ö.	841	0000	т 17	o Z		OMONADDS (12)		
SPARE	FLIEXEC	•		841	0023	•	•		SPARE	:	
SPARE	FLIEXEC	•	1		. 0024		•		SPARE	2)	(NOT USABLE)

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IMPUT • F	ло:[RICH.	INPUL . DRO:[RICH.MAST]TELEMETRY.	.MAS; 18 / 29-APR-1982 14:05:04.03	9-APR-19	82 14:	05:04.03	•	29-APR-82 15:24:49	15:24:49	PAGE	5	
HAMF	DPROC	TYPE UPROC /	FL.1 DUNITS	CANT SOFT TABLE	WARE D ENTRY	LENGTH	FLIGHT SOFTWARE DICTIONARY V1.0-5 TABLE EMFRY LENGTH SCALE UNITS	VALUE	DEF INITION			
CI NWW IW	rlifxec	>	и.б.	842	0000	I	17 N.D.		OMDNADOS(13)			
SPARE	FLTEXEC	•		842	0003	•			SPARE	:		(
MF MMN 14	FLIEXEC	>	N.0.	842	0004	x	17 N.D.		OMONADDS(14)			ORIO OF
SPARE	FLIEXEC	•	•	812	0000	•			SPARE	:	•	GIN. Pod
MF HWN 15	FLIEXEC	>	N.D.	942	8000	3	17 N.D.		OMONADDS(15)			AL OR
SPARE	FLIEXEG		•	842	1.00	•			SPARE	:		PA QU
MEMMN 16	FLIEXEC	>	N.D.	842	2100	*	17 N.D.		OMDIVADDS (16)			GE ALI
SPARE	FLTEXEC		•	842	00 15	•			SPARE	:		ei YT
MF MINI 17	FLTEXEC	>	N.D.	842	9100	E	17 N.D.		OMONADOS (11)			
SPARE	FI TEXEC	•	•	842	6100				SPARE	:		
MF MMN 18	FLIEXEC	>	₩.D.	842	0020	2	17 N.D.		QMONADDS(18)			
SPARE	FLTEXEC	•		842	0023	•			· · · · SPARE	:		
SPARE	FLTEXEC	•	•	642	0024	•			**************************************	···· (NOT USABLE)	WOT USA	3LE)

TABLE 2-63

SOLAR EPHEMERIS

OBC TELEMETRY REPORT

SOLAR EPHEMERIS REPORT #1

Minor Frame Number: 64

OBC Telemetry Report Number: 43

Minor Frame word
ENTRY

91	92	93	94	95
0	1	2	3	4
		. 1		
4	TSOL -			

108	109	110	111	112
5	6	7	8	9
			6114	
			SIX	

113	114	115	116	117
10	. 11	12	13	14

118	119	120	121	122
15	16	17	18	19

123	124	125	126	127
20	21	22	23	24
		- V		7
>	VI	Y	▼ VE	z ——

TABLE 2-64

SOLAR EPHEMERIS

OBC TELEMETRY DEFINITIONS

INPUI	- DBO. [RICH.	INPUI - DBO.[RICH.MASI]IELEMEIRY.MAS;18 / 29-APR-1982 14:05:04.03	. MAS: 18 / 3	19-APR-1	982 14:	05:04.0	: -		29-APR-82 15:24:49		PAGE . 52	23
NAME	DPRUC	TYPE UPRUC /	UPRUC / DUNITS TABLE ENTRY LENGTH SCALE MAITS	TABLE	TWARE L	FLIGHT SOFTWARE DICTIONARY VI.O.5 TABLE ENTRY LENGTH SCALE UNIT	SCALE		VALUE	DEFINITION		
180L	SEPHEM	>	MSEC	843	0000	٥	38	MSEC	•	SOLAR EPHEMERIS TIME	w	
ب	SEPHEN	>	CIRCLE	843	000	۵	-	CIRCLE		SOLAR TRUE LONGITUDE	ш	
SIX	SEPHEM	>	N.D.	843	000	٥	0	N.D.		DIRECTION COSINE		
SIY	SEPHEM	>	N.D.	843	8	٥	0	N.D.	•	DIRECTION COSINE		
718	SEPHEM	>	N.D.	643	2100	٥	0	N.D.		DIRECTION COSINE		
VFX	SEPHEM	>	KM/SEC	843	6100	v	ស	KM/SEC		X-COMPONENT (ECT FRAME)	AME)	
VEY	SEPHEM	>	KM/SEC	843	0021	s	ស	KM/SEC		Y-COMPONENT (ECT FRAME)	AME)	
V£7	SEPHEN	>	KW/SEC	843	0023	vı	រវា	KH/SEC		2-COMPONENT (ECT FRAME)	AME)	

这一个时间,我们就是一个时间,他们就是一个时间,他们就是一个时间,他们就是一个时间,他们也是一个时间,他们也是一个时间,他们也是一个时间,他们也是一个时间,他们

では、これでは、これでは、1945年のでは、1945年のでは、1945年のでは、1945年のでは、1945年のでは、1945年のでは、1945年のでは、1945年のでは、1945年の日本のでは、194

TABLE 2-65
STORED COMMAND POINTER
OBC TELEMETRY REPORT

STORED CMD POINTER REPORT

SVS-10123A Volume II October 1982

Minor Frame Number: 2

OBC Telemetry Report Number: 45

Minor Frame word ENTRY

Data

91	92	93	94	95
0	1	2	3	4
ATC	PTR	SWVERNO	← R	TS1

108	109	110	111	112
5	6	7	8	9
			- RTS 2 -	

113	114	115	116	117
10	11	12	13	14
		RTS	3	

118	119	120	121	122
15	16	17	18	19

123	124	125	126	127
20	21	22	23	24
	RTS 5-		- ATCNXT -	

 $\left(\frac{1}{2} \right)$

TABLE 2-66

STORED COMMAND POINTER

OBC TELEMETRY DEFINITIONS

SVS-10123, Voluma I October 198:

ORIGINAL PAGE IS OF POOR QUALITY

29-APR-82 15:24:49 PAGE 54 Alue definition	ABSOLUTE POINTER (STORED CHOS)	DBC VERSION NUMBER \042782V16DQ	INHIBIT ACTIVE STATUS 0-15	INHIBIT ACTIVE STATUS 16-31	INHIBIT ACTIVE STATUS 32-47	INHIBIT ACTIVE STATUS 48-63	INGIBIT ACTIVE STATUS 64-72. FOR ALL RIS WORDS: 81T 0: 1/0 INGIBITED/EMABLED. 81T 1: 1/0 ACTIVE/INACTIVE. \042882V18DQ	TIME OF NEXT STORED CMD \042882V18DQ
29-APR-82 Value								
1.0-5 E UNITS	A.	N.A.	Z. A.	N. A.	λ. Α.	N.A.	A.A.	MSEC
D-APR-1982 14:05:04.03 BHT SOFTWARE DICTIONARY VI.O-5 TABLE ENIRY LENGTH SCALE UNITS	ñ	7	ë	5	31	31	4	27
:05:0 DICTI LEN	>	>	>	Þ	>	>	>	>
1982 14 TVARE (ENTRY	0000	0000	0003	0000	2	0015	6100	0022
2,2	645	845	845	845	845	845	8 8 8	845
MAS; 18 /	я. А.	N.A.	N . A .	N.A.	N.A.	N.A.	Z. 4.	SEC
INPLIT - DBO:[RICH.MAST]TELEMETRY NAME DPROC TYPE UPROC /	>	>	>	>	>	>	>	>
380 : [R 1 CH . M DPR0C	FL'EXEC	FI. TEXEC	FLIEXEC	FLIEXEC	FI TEXEC	FI.TEXEC	FLIEXEC	FLIEXEC
INPUT = D	AICPIR	SWVERMO	RISI	RIS2	RIS3	R154	R155	AICNXI

()

TABLE 2-67

STATUS BUFFER

TELEMETRY REPORT

STATUS BUFFER TELEMETRY REPORT #1

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(fixed section)

Minor Frame Number: 124

OBC Telemetry Report Number: 46

Minor Frame word

ENTRY

91	92	93	94	95
0	-1	. 2	3	4
QSTA'	rbur ———	→ QST	ATPIR	QSTATEND —

108	109	110	111	112
5	6	7	8	9
	QSTA	TOVF		(STATP1—— (18bits)

	113	114	115	116	117
	10	11	12	13	14
A	xxxxx	⊸—QSTA (18b		XXXXXX	

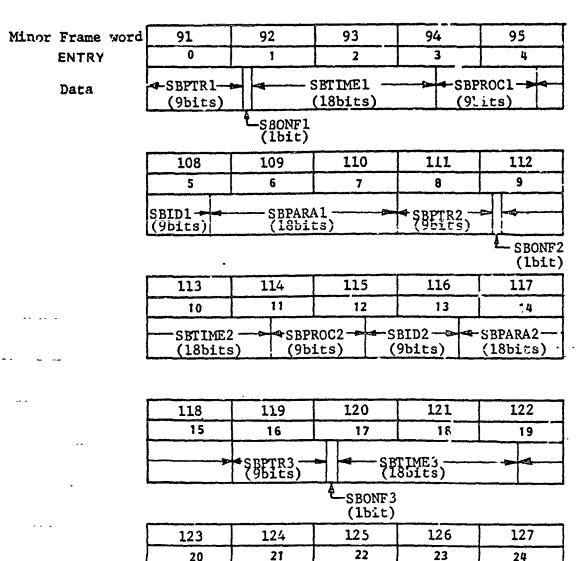
118	119	120	121	122
15	16	17	18	19
-QSTATP3 -	-	,	ATP4	-0-
(18bits)			Bbits)	XXXXXX

123	124		125	125	127
20	21		22	23	24
QSTA		4	**********	SPAR	₹E
(18b)	its)		XXXXXX		

STATUS BUFFER REPORT # 2

Minor Frame Number: 125

OBC Telemetry Report Number: 50



SBPROG SBID3 -

(9bits)

3(9bit)

SBPARA3 -

(18bits)

LOSTDATA

Table 2-68. Status Buffer TLM Definitions

SVS-10123A Volume II October 1982

Status Buffer information is available via OBC dump as described in Section 2.5.2 or via OBC TLM Reports 46 and 50.

Report 46 (Status Buffer Report #1) contains the information of the Fixed Format area of the Status Buffer (2.5.2.1).

Report 50 (Status Buffer Report #2) will sequence through the Variable Section of the Status Buffer presenting 3 Variable Section reports each time, completing the entire 60 word Variable Section in 320 seconds. If the Variable Section wraps around faster than it can be output by TLM the LSTDATA Flag (Report 50, word 25) will be set to 377 (octal).

ORIGINAL PAGE IS OF POOR QUALITY

15:24:49 PAGE 55	OEF INITION	ABS AUGRESS OF START OF VARIABLE SECTION OF STATUS BUFFER \012982VIGGA	ABS ADDRESS OF THE WORD FOLLOWING THE LAST WORD OF THE LAST REPORT VOLTOBATWICEA	LAST ADDRESS OF STATUS BUFFER VOI2902VIGHA	MESER OF STATUS BUFFER WRITE WARRENDED STATUS SUFFER WRITE	ADDRESS OF THE LAST INSTRUCTION THAT TREED TO STORE GUTSIDE ITS ASSIGNED AREA \012902VIGRA	CONTENT OF THE A REGISTER WIEN INST WAS	CONTENT OF THE PAGE AND MISC REGISTERS WHEN INST WAS EXECUTED \012982V167A	CONTENT OF THE EFFECTIVE ADDIES IF THE STORE OF MAS INDIRECT, O IF 'STA' \\O12982VIGRA	COUNT OF STORAGE PROTECT ERRORS SINCE LAST STATUS BUFFER RESET \012482VISAA	PARA OF TIMES SENTON WRAPPED ARCHAD Status Buffer (Reading) \032782v17dq	**** S P A R E **** \012982V168A
29-APR-82	VALUE				•					•		•
£.0	CWI TS	¥.0.	Z. O.	R.O.	N. O.	K. O.	M. D.	N.O.	7. 0.	₩.0.	M.O.	•
×-0 =>	SCALE	5	ē.	2	č	11	1.1	11	2	13		,
110348	LENGTH SCALL UNITS		_		_				_			
10:41	A .	>	D C	7	>	> ©	>	7		•	>	•
1982 F 1 M A E	ENTRY	8	2000 .	4000	8000	8000	8	8	7100	0020	0033	0024
1:18 / 29-APR-1982 14:05:04:03	TABLE	846	946	846	846	946	846	846	9 4 6	846	. 946	978
. 18	DUNITS	₽. Ď.	. O.	N. D.	K.O.	N. O.	N.D.	N.D.	M.D.	N.O.	N.D.	
INDUT + DBO-[RICH, MAST]TELEMETRY MAS	TYPE UPROC /	>	>	>	>	>	>	>	>		>	•
жо - (втси.	DPROC	SBMM	SGMON	NOWBS	SBMON	NOMBS	SBIGOM	SBMON	SBMON	SBMON	SBHOM	номаѕ
110011 · C	NAME	0\$1A1BUF	STATPTR	OSTATEND	051A10VF	OSTATPS	051ATP2	051A1P3	051A1P4	OSTATPS	MOVR	SPARE

AND PT

					į		ORIGIN OF PO	IAL PA OR QU	IGE IS				(SVS- Vol Octobe	10123A Umo II r 1982
PAGE 60		DBC SORD LOCATION WITHIN THE STATUS BUFFER. INCREMENTS BY 3 FOR EACH TLM ENTRY. RANGES 0-59. \020282V:608	IF DATA MSG HAS BEEN QUIPUT PRIOR TO THIS QUIPUL, THIS BIT-1 (OLD). IF NOT, THIS BIT-0 (NEW). \OZO202071608	OBC CLOCK 18 VALUE AT THE TIME OF MESSAGE \020282V16DB	PROCESSOR ID TO IDENTIFY THE DRC PROCESSOR INVOLVED. IF ND PROCESSOR INVOLVED, SET "O. \020202VIGO3	AN ID MUMBER CODE TO IDENTIFY THE MESSAGE MEANING \020202VIGDB	PARAMETER GIVES ADDITCMAL MEANING TO REPORT TO CODE, SEE DOCUMENT S-700-56 REV B PG 3-12 FOR MORE INFORMATION \Q20282V16DB '	OBC WORD LOCATION WITHIN THE STATUS BUFFER, INCREMENTS BY 3 FOR EACH TLM ENTRY, RANGES 0-59, \020202V16DB	IF DATA NSG HAS BEEN DUTPUT PRIOR TO THIS DUIPUL, THIS BIT-1 (OLD). IF NOT, THIS BIT-0 (NEW). \020262V16DB	DBC CLOCK 18 VALUE AT THE TIME OF HESSAGE \020282V:508	PROCESSOR ID TO IDENTIFY THE OBC PROCESSOR INVOLVED. IF NO PROCESSOR INVOLVED. SET *0. \020282VIGD3	AN ID MAGGER CODE TO IDENTIFY THE RESSAGE HEANING \020282VIGDS	PARAMETER GIVES ADDITOMAL MEANING TO REPORT ID CODE. SEE DOCUMENT S-700-98 REV D PG 2-12 FOR MORE INFORMATION \\020282V16D3	GGC MORD LOCATION WITHIN THE STATUS BUFFER, INCREMENTS DY 3 FOR EACH TLM ENIRY, RANGES 0-59, \Q20282VIGOB	IF DATA MSG HAS BEEN CUIPUT PRIOR TO THIS CUIPUT, THIS BIT-1 (OLD). IF NOT THIS BIT-0 (HEW). \020282V1508
15:24:50	DEFINITION	OBC SORD LOCATION WI BUFFER, INCREMENTS E ENTRY, RANGES 0-59.	IF DATA MSG P THIS OUTPUT. THIS BIT-0 (A	THE DBC CLGCN	PROCESSOR 1D PHOCESSOR IN INVOLVED, SET	AN 10 NUMBER Wessage Meani	PARAMETER CIN REPORT TO COO REV B PG 3-12 \O20282VIEDB	OBC WORD LOCA BUFFER, INCRE	IF DATA MSG H THIS CUIPUL. THIS BIT-O (A	THE DBC CLDCH THE HESSAGE	PROCESSOR 1D PROCESSOR INV INVOLVED. SET	AN ID MMBER RESSAGE MEANI	PARAMITER GIVES REPORT ID CODE. REV D PG 3-12 F(GGC WORD LOCA BUFFFR. INCRE	IF DATA MSG P. THIS GUIPUL. THIS BIT-O (L
29-APR-82	VALUE			•											
	CWITS	۶. Ö.	N. D.	Ø. ¥.	O.	M.D.	. .0.	я. О.	N. O.	M.D.	N.O.	₹. 0.	۶. ٥.	Z. O.	N.O.
	- 23	•	0	11	•	•	11	•	c		•	6	1	•	•
05:04.C	LENGTH	8000	1000	8018	6009	8009	8018	6009	1000	8018	B009	6009	EO 16	8000	1000
9-APR-1982 14:05:04.C3	ENTRY	0000	<u>∞</u>	0000	6000	8004	\$600	9000	000	8000	6000	8 0 0	8	8013	6100
۲.	TABLE	950	820	850	850	850	0 8 8	920	920	850	820	850	950	920	8 50
.MAS: 18 /	DAW! 1	ă. O.	Z. Ö.	7. O.	3. 0.	N.D.	ž. 0.	S. G.	ă. Ö.	N. G.	Ğ.	N. O.	х. О.	Z.D.	N.D.
INPUT . DBO: [RICH. MAST]TELEMETRY. MAS; 18 /	TYPE UPROC /	>	>	>	>	>	>	>	>	>	>	>	>		>
D80: [RICH.	OPROC	SBMDN	SBMCN	SBKON	ВВИОМ	SEMON	SBMON	ВВКОН	SBMDN	SBMON	SBACIN	SEMON	SBROOM	SBMON	NOMIN
ment • (NAME	582181	SBONF 1	SBT IME 1	SBPROCI	10185	Suparai	5BP 1R2	SBONF 2	SBT IME 2	\$BPR0C2	58102	SBPARAZ	SBPTRJ	SBONE 3
							2-3	35							

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		THE TIME O	4E 08C PROCESSOR 1608	IFY THE 38	NEANING TO UT S-700-5 SEMATION	F BUFFER TY DATA CO 0/377
PAGE		LUE AT	VI 1 F V 1	D 10ENT	TONAL OCCURE	THE STEEMETS
15:24:50	DEFINITION	THE OBC CLOCK 18 VALUE AT THE TIME OF THE MESSAGE \020282VI6DB	PROCESSOR ID TO IDENTIFY THE OBC PROCESSOR INVOLVED. IF NO PROCESSOR INVOLVED, SET *D. \020282V16DB	AN 10 MUSER CODE TO IDENTIFY THE MESSAGE MEANING \020282V16DB	PARAMETER GIVES ADDITONAL NEANING TO REPOST ID CODE. SEE DOCUMENT S-700-56 REV G PG J-12 FOR MORE INFORMATION \020282VIGDB	FLAG INDICATING THAT THE ST BUFFER FILLED FASTER THAN TELEMETRY DATA COULD BE CUIPUT. NORMAL/OVERFICW 0/377
29-APR-62 15:24:50	VALUE					
1	1.0-5 UN115	N.D.	N.D.	S. O.	Ä.Ö.	Z. O.
	SCAL	12	•	•	5	
03:04.0	31 SOFTWARE DICTIONARY VI.O-5 Table entry Lemoth Scale Units	8018	6009	8009	B018 17	>
982 14:	ENTRY	8	et 00 .	91 00	1100	0024
29-APR-1	FLIGHT SOFTWARE DICTIONARY VI.O-55; TABLE ENTRY LENGTH SCALE UNIT	850	830	850	850	850
MAS: 18 /	FL DUNITS	۶. 0.	N.D.	N.O.	, 0.	N. O.
INPUT . DRO: [RICH, MAST]TELEMETRY, HAS; 18 / 29-APR-1982 14:05:04.03	TYPE UPROC /	>	>	>		>
10: [RICH.	DPROC	SBMON	SBHON	SBMON	SGMON	SBMON
INPUT . DA	NAME	SBIIME3	SBPROC3	SRIDJ	SBLARAJ	LOSTDATA

2.5.2 OBC STATUS BUFFER

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The OBC maintains a buffer which will keep a log of system and spacecraft activities, including reports of errors and anomalies detected by the Flight Executive or by processors and reports attempts by processors to send commands while they are inhibited from commanding. The Status Buffer contains two sections, a Fixed section and a Variable section. The Fixed area consists of a set of words reserved for specific uses. The Variable section contains three word reports packed into the buffer in the order in which they were reported. This buffer may be dumped and reset by ground command using an Executive Request code 14. If the operand of this request is 1, the buffer will be dumped. If the operand is 0 the buffer is reset. In resetting the buffer, words 0 and 2 of the fixed format section are left unchanged. Word 1 is set to the address of the first word of the variable section. The remainder of the buffer, both fixed and variable, is set to zero. The format of the dumped Status Buffer is the same as shown in Section 2.2.5.

2.5.2.1 Fixed-Format Area of the Status Buffer

The fixed-format area is at the beginning of the status buffer. Each word contains a single piece of information, and the position of the word indicates the nature of the information. The area consists of 8 words, which have been assigned the following uses:

- Words 0 through 3: Pointers and flags for the variable section.
 - 0 QSTATBUF absolute address of the start of the variable section.
 - 1 QSTATPTR absolute address of the word following the last word of the last report stored.
 - 2 QSTATEND absolute address of the last word of the variable section.
 - 3 QSTATOVF wraparound flag. This is a count of the number of times the variable section has overflowed and wrapped around since the status buffer was last reset. If no overflow has occurred, the word is zero.
- Words 4 through 8: Storage protection violation.
 - 4 address of the last instruction that tried to store outside its assigned area.
 - 5 contents of the X register when the instruction was executed.
 - 6 contents of the page and miscellaneous registers when the instruction was executed.
 - 7 contents of the effective address if the store operation was indirect, 0 if the instruction was store accumulator.
 - 8 count of the number of storage protect errors since the status buffer was last reset.

2.5.2.2 Variable Section of the Status Buffer

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The variable section of the status buffer follows the fixed-format area. It contains three-word reports stored in chronological order. In case of buffer overflow, processing wraps around and new reports are stored over the oldest in the section. Sixty (60) reports may be stored before wraparound occurs. The error is reported in the Flight Executive Report (Report #39) in the OBC's contribution to telemetry, and a count of the number of times wraparound has

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occurred (which indicates the number of reports lost) is stored in the fixedformat area of the status buffer.

The format of reports is as follows:

WORD 0	18 TIME	
WORD 1	PROCESSOR NUMBER	1 Raemun di
WORD 2 .	18 PARAME	TER

The time is the 18-low-order bits of the OBC clock. The ID number gives the basic meaning of the report and the processor number identifies the processor involved. (Processors are numbered from 1 up to the order of their PCTs in memory. The processor number will be 0 if no processor is involved in the report.) Table 2-67 defines the meaning of various ID numbers.

The parameter word gives additional information. In many error reports from the Absolute Time Command Processor, the parameter will give the location in the stored command buffer of the erroneous command. In some reports, no information other than ID number and processor number is needed. In those cases, the content of the third word is meaningless and can be set to 0 by the processor. Table 2-67 identifies parameters (3rd word) associated with various ID numbers. See S-700-56 Rev B-MMS OBC Flight Executive Technical Description, Appendix B for further description of variable section reports.

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Table 2-69. Status Buffer Variable Section Definitions

Report Decimal	ID #	Meaning	Parameter (Word 3)
32	20	Overflow in requests to store reports	Interrupt handler relative location
33	21	Invalid status buffer report number	Source of request
34	22	Invalid jump pseudo-op	Location of jump pseudo op
37	25	Command stack overflow	Which stack overflowed 0 = low priority 1 = high priority
38	26	Invalid code in processor request for service	Absolute address of instruction
39	27	Block number too big in stored cmd to send predifined block	Command # of pseudo op
40	28	Illegal	Absolute address of interrupt interrupt in section error
41	29	Error in specifying functions for processor control	
42	2A	Error in command hardware	Neg # - number of cmds lost Pos # - number of spurious cmds received
43	28	Invalid op code in pseudo-op stored cmd	Cmd number of invalid pseudo op
44	2C	Too much stacker overflow for ATCP	Command number of first end lost
46	2E	Error in specifying functions for RTS Control	

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Table 2-69. Status Buffer Variable Section Definitions

Report Decimal	ID Ø Hex	Meaning	Parameter (Word 3)
47	2F	Error in sequence number for RTS Control	Invalid RTS number
48	30	Request to activate an active RTS	Number of RTS
49	31	Request to activate an inhibited RTS	RTS number
50	32	Invalid number in request to reserve space for RTS	Invalid number
51	33	Invalid number for loading RTS RTS commands	Invalid number
52	34	Invalid number for loading RTS times	Invalid number
53	35	Invalid length in request to reserve space for an RTS	Sequence number of RTS
54	36	RTS buffer overflow	Sequence number of RTS
55	37	Attempt to clear RTS buffer while a sequence is active	Sequence number lowest # active seq.
56	38	Invalid length in loading RTS commands	Sequence # of RTS
57	39	Invalid length in loading RTS times	Sequence # of RTS
58	3A	Attempt to load CMDS for an RTS before space reserved	Sequence # of RTS
59	38	Attempt to load times for an RTS before space reserved	Sequence # of RTS

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Table 2-69. Status Buffer Variable Section Definitions

Report Decimal	ID # Hex	Meaning	Parameter (Word 3)
60	3C	Error in requesting RTS dump	Erroneous sequence #
61	3D	Attempt to reserve larger space for active RTS	Sequence # of RTS
62	3E	Attempt to load commands for active RTS	Sequence # of RTS
63	3F	Attempt to load times for active RTS	Sequence # of RTS
256	100	Processor cut off too many times	
257	101	Processor requested while execution	
258	102	Processor which is command inhibited has tried to send commands	Absolute address of high order of first CMD in the batch
259	102	Invalid op code in executive request	
260	104	Invalid entry in processor priority table	
261	105	Scheduler table processing started or stopped	1 = stopped 0 = started
262	106	Request for processor control specifies nonexistent processor	
263	107	Error in request to load or dump table	
264	108	Invalid PCT loc in scheduler table or table of long period processors	

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Table 2-69. Status Buffer Variable Section Definitions

Report Decimal	ID #	Meaning	Parameter (Word 3)
265	109	Invalid entry point for snap action	
266	10A	Failure in switching control of TLM format	
267	108	Telemetry sync loss	
268	100	Common error	
270	10E	Error in CMD count in processor request to stack a batch of CMDs	
271	110	Software dump timing error	
272	112	Stored command load would overflow buffer	
273	113	Error in loading TLM addresses	
274	114	The operand required by an executive request was never received	
275	115	Invalid block number in loading predefined block	
276	116	Invalid starting point for ATCP	
277	117	RTS control requested while RTCP waiting to initialize	
278	118	Request to clear RTS buffer while commands still stacked	
279	119	Telemetry went out of sync with clocks	

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Table 2-69. Status Buffer Variable Section Definitions

Report Decimal	ID #	Meaning	Parameter (Word 3)
280	11A	Telemetry went back into sync with clock	·
282	110	Error in request to reset OBC contribution to TLM	
283	110	Error in specifying buffer for stacking cmds	
284	11E	Bug in flight executive	
285	120	OBC clock was not incremented properly while telemetry was in dwell	
286	121	MEMTST found error	Address of bad word
287	122	Telemetry frame number error	Bad frame number
288	123	Error in changing TLM bit rate	Erroneous code
508	1FC	Critical Processor error	Processor # disabled
509	1FD	System table update incomplete out of stored commands	
510	1FE	Software stored command error	Pointer of CMD error
511	1FF	Telemetry monitor out of limit	TLM group out of limit

2.6 OPERATIONAL CONSIDERATIONS

The C&DH Subsystem transponder is capable of being operated in the TDRSS or G .DN mode of operation, i.e., one transponder can be operated in the TDRS mode and the second in the GSTDN mode. The data source and telemetry rates with appropriate antennas have to be command selected as shown and described earlier.

2.6.1 OBC DUMP

The OBC memory dump is command selectable at 1 or 32 kbps. At 32 kbps, a memory bank of 4096 words (times 32 bits per word) will take approximately 4.682 seconds for the first copy. Since the OBC Dump is transmitted four times, it takes 18.728 seconds to transmit. At 1 Kbps it takes approximately 9.988 minutes to transmit it four times 32 kbps will be used for Landsat-D. Since there are 16 memory banks for Landsat-D, it takes approximately 4.99 minutes to transmit the entire 64K memory at 32Kbps without considering the executive request and C&DH commands needed to change the fixed bank ID. This does not take into account the time required for commanding to change to other fixed memory banks.

2.6.2 GPS DATA

The GPS data files are transmitted as part of the telemetry at the 1 or 8 Kbps rate under the CU format control. Allocating approximately 12 columns to the GPS data files (944 bits or 112 words long) in the mission format and a reduced number of 5 columns during the engineering format. See SVS-10125, Data Format Control Book, Volume IV, (Global Positioning System) for the frequency of data file types and output rates.

2.6.3 RANGING

When either OBC Dump or NBTR playback or PCD data is transmitted over the high rate channel, range measurements in the GJTDN mode are not possible. Range rate is possible. TDRS range and range rate is possible regardless of high rate channel data output (Table 2-7).

2.6.4 HIGH RATE CHANNEL TELEMETRY

Only one type of data can be transmitted in either TDRS or GSTDN modes via the high rate channel at a time (See Table 2-7):

- 1. OBC Memory Dump
 - 2. Narrowband Tape Recorder Playback
 - 3. Payload Correction Pata

SECTION 3

NASCOM MESSAGE FORMATS

3.1 GENERAL DESCRIPTION

The NASA Communications (NASCOM) Network is a global communications system consisting of diversely routed high speed data circuits with primary switching facilities at GSFC. Iwo distinct telemetry paths are possible for Landsat-D, namely, TDRS and GSTDN. The realtime telemetry stream between the GSTDN/TDRSS and the CSF is a computer compatible, digital format NRZ-L message, transmitted in standard 4800 bit message blocks. Each block is 300 16-bit words. All fields of the message block are transmitted with the Most Significant Bit (MSB) first.

3.2 TELEMETRY DATA (GSTDN)

The GSTDN message block begins with a 48-bit NASCOM network header, followed by a 48-bit User Message header, a 48 bit NASCOM Time Code, and ends with a 32-bit error control field. The 4624 bits between the header information and error control field are available for message data as shown in Figure 3-1. A description of each element of the format is provided in the following paragraphs:

- Bits 1-48, NASCOM HEADER: The network header contains NASCOM sync, routing and statistics information.
 - a. Bits 1-24, NASCOM Sync: This is a 24 bit synchronization field that is set to 30473047 octal used to determine the beginning of the 4800-bit block.

		1 NASCOM SYNC		
NETWORK HEADER	٠ ٢	NASCOM SYNC 24 25 SOURCE CODE	32	
	7	33 DESTINATION CODE 40 41 NO 43 44 FORMAT	CODE 48	
		49 SPACECRAFT I.D. 56 57 DATA STREAM I.D.	64-	
USER HEADER	\prec	65 MESSAGE TYPE 72 73 SPARE	80	
		S81 C82 F83 84 DATA LENGTH (N BITS)	96	
		97 98 99 DAY OF YEAR (9 BITS) 107 108		
TIME	MILLISECONDS OF DAY (27 BITS)	·		
		134	144	
		145 FIRST DATA BIT		
		DATA (4624 BITS)		
		(1004 5115)		
	•		1	
			}	
		LAST DATA BIT		
DI OCK	۲	BLOCK FILL (4624 - "N" BITS)		
BLOCK ERROR	.)	4769 4776 F1 F2 4779		
CONTROL		POLYNOMIAL REMAINDER	4800	

Figure 3-1. 4800 Bit GSTDN Telemetry Block LSD-WPC-007

Table 3-1. Source/Destination Codes

Source/Destination	Code (Octal)*
ALASKA (ULA)	023
GOLDSTONE (GDS)	016
MADRID (MAD)	011
GREENBELT (BLT)	030
HAWAII (HAW)	015
ORRORAL (ORR)	. 025
ASCONSION (ACN)	C 06
BERMUDA (BDA)	0 04
GUAM (GWM)	014
QUITO (QUI)	005
SANTIAGO (AGO)	0 10
MERRITT ISLAND (MIL)	001 '
LANDSAT-D CSF-1 8 Kbps RT TLM	106
LANDSAT-D CSF-2 32 Kbps OBC dump/PCD	306
LANDSAT-D CSF-3 128 Kbps STR Playback	046
* MSB LSB	
MDM/TDRSS MSG 33 40	·
GSTDN MSG 25 32	

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- b. Bits 25-32, Source Code: The 8-bit source code identifies the originator of the block by geographic locations. Source codes are assigned by Nascom and are listed in Table 3-1.
- c. Bits 33-40, Destination Code: This 8-bit field identifies the geographic destinations. Codes are same as source codes. See Table 3-1.
- d. Bits 41-43, Block Sequence Number: This 3-bit number identifies the sequence in which blocks are transmitted from the source.
- e. Bits 44-48, Format Code: This 5 bit code identifies the general type of data contained in the block. This field will be 21 octal for telemetry blocks.
- 2. Bits 49-96, User Header: The 48-bit user header is reserved for information required by users to route and process the data contained in the block.
 - a. Bits 49-56, Spacecraft ID: This 8-bit field identifies the spacecraft being supported. For Landsat-D the code is 070 octal. See Table 3-2.
 - b. Bit 57-64, Data Stream ID: This 8-bit field identifies the type of telemetry contained in message. See Table 3-3.
 - c. Bit 65-72, Message Type: This field contains a code which identifies the type of data in the block. This code is 106 octal for telemetry. See Table 3-4.
 - d. Bits 73-80, Spare: Set to all ones.
 - e. Bit 81, Spare:
 - f. Bit 82, Spare: Set to "0" for telemetry.
 - g. Bit 83, Full Block Flag: This bit is reserved for a flag which indicates when the message field is full. "1" = 4624 bits of telemetry data.
 - h. Bits 84-96, Data Length: The last 13 bits of the user header contains a binary count of the number of bits of telemetry data, exclusive of fill, contained in the data field.

- 3. Bits 97-144, Time: This 48-bit field is reserved for a Parallel Binary Four (PB4) time code. The timecode represents the leading edge of the first data bit of the telemetry Data below.
 - a. Bits 97-98: This 2-bit field is set to "00".
 - b. Bits 99-107: This 9-bit field contains Day of Year.
 - c. Bits 108-134: This 27 bit field contains milliseconds of day.
 - d. Bits 135-144: This 10 bit field contains all zero's: Microseconds of milliseconds is not used.
- 4. Bits 145-4768, Telemtry Data: The 4624 bit data field is used to transmit the telemetry data. When the data does not fill this field, fill bits are added after the last data bit. This fill will be 311 octal. The telemetry data is transmitted asynchronously. This is referred to as the throughput format. The sync from the FS may appear anywhere within the block and may reside across block boundaries.
- 5. Bits 4769-4800, Block Error Control: The block error control field is 32 bits in length and is reserved for the polycode to be used to determine if bit errors have occurred during transmission of the block.
 - a. Bits $\frac{4769-4776}{1}$: This 3-bit field is not used and will be set to all ones.
 - b. Bits 4777-4778: (F1, F2) These bits will be set to ones.
 - c. Bits 4779-4800: Polynomial Remainder: The last 22 bits of the block are reserved for the polynomial remainder which results from encoding the block.

NETWORK HEADER	· {	1 NASCOM SYNC		
MEAUER.	1	NASCOM SYNC 24 25 SPARE 3	2	
		33 DATA STREAM I.D. 40 41 PORT SEQUENCE NUMBER 4	3	
USER HEADER	. ک	49 FIXED CODE 56 57 FIXED CODE 6	14	
	- {	65 MESSAGE TYPE CODE 72 73 FIXED CODE 8	0	
		S81 C82 F83 DATA LENGTH (N BITS)		
TIME	7	97 98 99 DAY OF YEAR 107 108		
	3	MILLISECONDS OF DAY		
		134 135 MICROSECONDS OF MILLISECONDS 14	4	
145 FIRST DATA BIT				
		·	1	
		DATA (4624 BITS)		
		() SET SET SET SET SET SET SET SET SET SET		
	•			
		·		
		·		
		LAST DATA BIT: FILL	_	
51.004	سر	BLOCK FILL (4624 - "N" BITS)		
BLOCK ERROR	\	4769 4776 F1 F2 4779 ——————————————————————————————————		
CONTROL		POLYNOMIAL REMAINDER	,	

Figure 3-2. 4800 Bit MDM/TDRSS Telemetry Block LSD-WPC-007

Table 3-2. Spacecraft ID

SPACECRAFT	CODE (OCTAL)
Landsat-D	070
Landsat-D Prime	076

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Table 3-3. Data Stream ID

DESCRIPTON	CODE (OCTAL)		
	Landsat-D	Landsat-D Prime	
Realtime Telemetry	041	043	
OBC Dump & PCD	052		
NBTR Playback	042	044	

Table 3-4. Mesage Type Codes (Bit 65-72)

DESCRIPTION	CODE (OCTAL)
WSGT MDM Block (Command ECHO)	025
GSTDN Telemetry	106

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3.3 TELEMETRY DATA (TDRSS)

The TDRSS telemetry block, like the GSTDN, begins with 48 bits of Network Header, 48 bits of user header and 48 bits of time code. Subsequently, 4624 bits of telemtry data is followed by 32 bits of Block Error Control as shown in Figure 3-2. An element by element description follows:

- 1. Bits 1-48, Network Header: The network header is the 48 bits in the 4800-bit block format and contains the NASCOM sync code, routing and statistics information.
 - a. Bits 1-24, NASCOM Sync: The 24-bit NASCOM sync code is a fixed code used to determine the beginning of the 4800-bit block. The code is 30473047 octal.
 - b. Bits 25-32, Spare: Set to all ones (377 octal).
 - c. <u>Bits 33-40</u>, <u>Data Stream ID</u>: 8-bit field used to differentiate between various spacaecraft sets. Table 3-3 gives Data Stream ID codes.
 - d. <u>Bits</u> 41-48, <u>Port Sequence Number:</u> This is an 8-bit binary count used to identify the sequence in which blocks were transmitted to a specific port on the MDM.
- 2. Bits 49-96, User Header: The 48-bit user header is reserved for information required by users to route and process the data contained in the block.
 - a. Bits 49-56, Fixed Code: This field is a fixed pattern of 00000001 binary (001 octal).
 - b. Bits 57-64, Fixed Code: This field is a fixed pattern of 00000001 binary (001 octal).
 - c. Bits 65-72, Message Type: This 8-bit field is used to designate the MDM which blocked the data. Table 3-4 gives Message Type codes.
 - d. <u>Bits 73-80, Fixed Code</u>: This field is a fixed pattern of 00000001 binary (001 octal).

- e. Bit 81, Spare: Always a logic zero.
- f. Bit 82, Spare: Set to "0".
- g. Bit 83, Full Block Flag. This bit is reserved for a flag which indicates when the data field is full. "1" indicates 4624 bits of telemetry data.
- h. Bits 84-96, Data Length: The last 13 bits of the user header contain a binary count of the number of bits of telemetry data, exclusive of fill, contained in the data field.
- 3. Bits 97-144, Time: This 48-bit field is reserved for a Parallel Binary four (PB4) time code. The time code represents the leading edge of the first telemetry data bit described below.
 - a. Bits 97-98: This 2-bit field is set to "00".
 - b. Bits 99-107: This 9-bit field contains Day of Year.
 - c. Bits 108-134: This 27 bit field contains milliseconds of day.
 - d. Bits 135-144: This 10 bit field contains microseconds of milliseconds.
- 4. Bits 145-4768, Telemetry Data: The 4624 bit data field is used to transmit the telemetry data. When the data does not fill this field, fill bits are added after the last bit. This fill will be 311 octal. The telemetry data is asynchronous with the 4800-bit block therefore the minor frame sync may appear anywhere within the telemetry data field. In deed, it may be started in one block and end in the following block.

- 5. Bits 4769-4800, Block Error Control: The block error control field is 37 bits in length and is reserved for the polycode to be used to determine if bit errors have occurred during transmission of the block.
 - a. Bits 4769-4776: This 8-bit field is not used and will be set to all ones.
 - b. Bits 4777 Fl Set to logic zero by MDM:
 - c. Bit 4778 F2: Receiving MDM (GSFC) sets this bit to zero if the polynomial remainder is good; set to one if polynomial remainder is bad.
 - d. Bits 4779-4800, Polynomial Remainder: The last 22-bits of the block are reserved for the polynomial remainder which results from encoding the blocks.

SECTION 4

ACRONYMS AND ABBREVIATIONS

A Analog (Telemetry)

ACS Attitude Control System

A/D Analog to Digital

B Bilevel (Telemetry)

BBR Band-to-Band Registration

BCU Bus Coupling Unit

BCD Binary Coded Decimal

BIL Band-Interleaved-by-line

BIP Band Interleaved-by-Pixel

BSQ Band Sequential

CCSA Computer Address

CC Computer Command Slot

CCT Computer Compatible Tape

C&DH Command and Data Handling

CFPA Cooled Focal Plane Assembly (Array)

CMD Command

CSF Control Simulation Facility

C/RS Calibration/Restore Shutter

CU Central Unit

Demux Demultiplexer

Demod Demodulator

DFCB Data Format Control Book

DMS Data Management System

DPU Digital Processing Unit

DRRTS Data Receive Record Transmit Subsystem

EDC EROS Data Center

EDIPS EDC Digital Image Processing System

ELC End of Line Code

EROS Earth Resources Observation System

ERTS Earth Resources Technology Satellite

EU Expander Unit (for RIU) or Electronics Unit (for NBTR)

FAIRS Full Aperture Infrared Source

FM Flight Model

FOV Field-of-View

FPA Focal Plane Array

FPDA Focal Plane Detector Array

GDOP Geometric-Dilution-of-Precision (the ratio of uncertainty

in position of uncertainty in range measurements

GMT Greenwich Mean Time

GPS Global Positioning System

GSFC Goddard Space Flight Center

GSTDN Ground Spaceflight Tracking Data Network

HDT High Density Magnetic Tape

Mercury Cadmium Telluride HgCdTe

HOM

Horizontal Oblique Mercator

HRS Horizontal Resampling

ICD Interface Control Document or Drawing

IFOV Instantaneous Field-of-View

IGFOV Instantaneous Geometric FOV

IM Instrument Module

InAs Indium Arsenide

InSb Indium Antimonide

IRG Inter-Record Gap

IRIG-A Inter-Range Instrumentation Group, standard time, format A

LED Light Emitting Diode

LFA Laminar Flow Array

LHC Left-Hand Circular

LLC Line Length Code

LS Line Start

LSB Least Significant Bit

LSD Landsat-D

LSW Least Significant Word

MA Multiple Access

MDB Multiplex Data Bus

MDM Multiplexer-Demultiplexer (MUX-DEMUX)

M/F Minor Frame

MMS Multimission Modular Spacecraft

MNFS Minor Frame Sync Code

Modulator

MSB Most Signficant Bit

MSS Multispectral Scanner or Module Support Structure

MSW Most Significant Word

MUX Multiplexer

NASCOM NASA Communications Network

NBTR Narrowband Tape Recorder

NDS Navigation Data Satellite

NETD Noise Equivalent Temperature Difference

NRZ Nonreturn to Zero (digital code)

NRZ-L Non-Return to Zero Level

OBC On Board Computer

OCC Operation Control Center

OCG Orbital Computations Group

ONS Operational Navigation Satellite

P Passive Analog (Telemetry)

PAM Pulse Amplitude Modulation

PCD Payload Correction Data

PDU Power Distribution Unit

PFD Pre-Flight Disconnect

PM Propulsion Module

PMP Pre-Modulation Processor

PN Pseudo Noise

POCC Payload Operations Control Center

PROM Programmable Read Only Memory

PROP Propulsion (Subsystem)

PS Polar Stereographic

PSK Phase Shift Keyed

RAM Random Access Memory

RF Radio Frequency

RHC Right Hand Circular

RIU Remote Interface Unit

R/PA Receiver/Processor Assembly (GPS)

RT Real Time

S Serial Digital (Telemetry)

SAM Scan Angle Monitor

SBRC Santa Barbara Research Center

S/C Spacecraft

SC&CU Signal Conditioning & Control Unit

SiFPA Silicon Focal Plane Array (Assembly)

SiFPA Silicon Focal Plane Array (Assembly)

SLC Scan Line Corrector

SLS Scan Line Sync

SMA Scan Mirror Assembly

SMC Scan Mirror Control

SME Scan Mirror Electronics

SMM Solar Maximum Mission

SOM Space Oblique Mercator

SQPSK Staggered Quadriphase Phase Shift Keyed

SSA

S-Band Single Access

STACC

Standard Telemetry and Command Components

STDN

Spaceflight Tracking Data Network

STINT

STACC Interface Unit

SUBCOM

Subcommutation

TA

Telemetry Address

TBS

To Be Supplied

TC

Time Code

TCG

Time Code Generator

TCS

Thermal Control Subsystem

TDRS

Tracking and Data Relay Satellite

TDRSS

Tracking and Data Relay Satellite System

TGS

Transportable Ground Station

TLM

Telemetry

TM

Thematic Mapper

TU

Transponder Unit (for NBTR)

UQPSK

Unbalanced Quadrature Phase Shift Keyed

UTM

Universal Transverse Mercacor

VRS

Vertical Resampling

WB

Wideband

WBVT

Wide Band Video Tape

WBVTR

Wideband Video Tape Recorder

SECTION 5

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